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ABSTRACT

This book, consisting of five parts, provides a collection of source materials that will assist in implementing individualized instruction; provides examples of interrelated systems for individualizing instruction; and describes the components of individualized instructional systems, including flexible use of time, differentiated staffing, new administrative roles, continuous progress curriculum, effective facility utilization, and continuous evaluation. Part 1 consists of an article that examines reasons why current innovations are not more productive, suggests methods for improvement, and describes appropriate criteria for judging program effectiveness. Part 2 includes articles designed to give practical ideas for the effective utilization of staff. Part 3 is concerned with the organization of content in individualized programs, including sequentially organizing matter and packaging it in a format suitable for student utilization. Part 4 deals with the role of the professional and the paraprofessional. Part 5 examines evaluation as it applies to innovative programs, including traditional and criterion-referenced evaluation. (PD)

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MODELS FOR INDIVIDUALIZED INSTRUCTION

Edited by

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DEDICATION

To Martha and J. Lloyd Trump
whose ideas and commitment have
challenged us to make a myth a
reality — the individualization
of teaching and learning.

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PREFACE

The individualization of instruction is a common goal of most contemporary educators. The processes and procedures utilized to accomplish this complex goal are many and varied. In our work with schools throughout the country we have found and developed resource materials and strategies that have been of assistance to teachers and administrators as they begin to individualize instruction. It is, therefore, our hope to present in this publication resource materials and systems that we have found to be particularly effective. No attempt has been made to provide a definitive, comprehensive overview of individualized instruction.

The basic goals of this book are as follows:

1. To provide a collection of source materials that will assist districts and schools in implementing individualized instructional systems.
2. To provide examples of interrelated systems for individualizing instruction (i.e., Pontoon Transitional Design, Model Schools Project).
3. To describe the components of individualized instructional systems. These components include flexible use of time, differentiated staffing, new administrative roles, continuous progress curriculum, effective facility utilization, and continuous evaluation.

A dynamic growing system of education is our hope. No one collection of ideas and plans will in and of themselves assure such a system (these materials are but a beginning). It is our desire that they may offer additional alternatives for the implementation of individualized instructional programs. These efforts reflect our commitment and that of our colleagues as we pursue the goal of excellence in education.

William Georgiades
Donald C. Clark

Los Angles, California
February, 1974

PART I

RATIONALE FOR INDIVIDUALIZING INSTRUCTION

Introduction

Much has been said and written about the inevitability of change in our modern and complex society. Educational journals are filled with descriptions of major changes that are taking place in schools across the country. Yet, when one examines closely the programs of most of these "so called" innovative schools, there is very little evidence that meaningful change has or is taking place. To be sure, courses have been periodically updated, dropped, or added, and instructional aides, modular scheduling, differentiated staffing, and other innovations have been implemented. Unfortunately, these innovations often reflect little change in basic philosophy and objectives of the school with regard to teaching and learning. As a consequence, many of these programs have done little to alter the educational experience of the student.

In the initial article in this book, Dr. J. Lloyd Trump, Associate Secretary of the National Association of Secondary School Principals and Director of the NASSP--Danforth Model Schools Project, examines some of the reasons why current innovations are not more productive. He then suggests methods for improvement and describes appropriate criteria for judging program effectiveness.

Dr. Trump has been a teacher, principal, superintendent, and college professor. His work is well known and has had a great impact on secondary education throughout the United States.

HOW EXCELLENT ARE TEACHING AND LEARNING IN YOUR SCHOOL?

(ARE TODAY'S EDUCATIONAL INNOVATIONS WORTHWHILE? - CHANGE WITHOUT RATIONALE IS IMPOTENT)

By J. Lloyd Trump

Innovations such as team teaching, independent study, large-group instruction small group discussion, flexible scheduling, use of teacher assistants, new or revised curriculum content, and the application of newer technical aids to teaching and learning are widespread. We know now how to overcome the barriers of the educational setting. Actually, it is relatively simple to organize a school differently. Curriculum content can be arranged logically in a nongraded, continuous progress sequence. Teachers can work in a variety of types of teams to break the isolation of the self-contained classrooms. Rigid time divisions are replaced easily by flexible schedules; some schools even make up their timetables daily or weekly. Students can easily be regrouped into classes of 100 or more for some purposes and into other classes of 15 or fewer for different activities. Pupils also can be scheduled for extended periods of time into resource centers for independent study. Teachers can use clerks, instruction assistants, general aides, and technical devices effectively.

All of these modifications are occurring in schools. Although it takes knowledge and courage to make the changes, the big problem lies elsewhere. The challenge is for teachers to learn new instructional roles and evaluation procedures to go with the changes. Some persons use other terms such as teaching styles or teacher tasks; I include those meanings in the term, teacher roles. Unless teachers learn and adopt new roles, their teaching and the resultant pupil learnings will be little better or different than in the past. No wonder that the evaluation of most of these innovations fails to reveal significant differences in pupil learning one way or the other. Actually, in most cases, teaching methods and schools have not changed basically--just some superficial trappings are altered, even though at considerable effort.

How do you judge the quality of teaching and learning--and school excellence--in any school, innovative or conventional? The usual bases are inadequate. Such matters as size of class, number of minutes that classes meet per week, the number of credits in pedagogy or subject content possessed by teachers, the number of books in the school library, the cost of the school building, and a host of others, are quite meaningless as measures of excellence.

In contrast to the foregoing criteria, I suggest here some measures that are crucial in judging the excellence of teaching and learning, and therefore the entire school program. In doing so, I will discuss at some length three educational goals that are crucially important. The three terms that categorize these objectives are almost educational clichés. They have been urged and described for many years. Unfortunately, too much hazy thinking and timid efforts have blocked progress towards reaching the goals. Moreover, existing school settings and practices get in the way. The three goals are: individualizing pupil learning, professionalizing teaching, and refining curricular content.

INDIVIDUALIZING PUPIL LEARNING

Here are five essential ingredients that are necessary if the school truly individualizes pupil learning. I use the adjective, "essential," because anything less than the alterations described in the subsequent paragraphs constitutes only gestures in the right direction--of some value, but necessarily limited. In order to evaluate teaching and learning in either a conventional school or one with team teaching, television, auxiliary personnel, computer-assisted instruction, flexible scheduling, or any other innovation, we need first to analyze the school's provisions for independent study.

Quantity and Quality of Independent Study. I define independent study very simply: it is what pupils do when their teachers stop talking. Teachers need to remind themselves constantly that their goal is not for themselves to cover the subject, but to get their pupils to do so. The purpose of teacher talk (done either personally or by means of a film, TV program, or otherwise) is to motivate pupils to learn what they need to learn, and to challenge the creativity and the special interests of pupils to go beyond the required minimums. Teacher talk also provides pupils with information not readily available to them elsewhere, and makes assignments so that each pupil may engage successfully in independent study.

Teachers need to understand that independent study has two dimensions. The pupils' first priority is to cover what the school requires anyone who is educable to learn, a matter that will be discussed later. The second dimension relates to creativity and depth studies, matters also discussed subsequently in this statement. Independent study is sometimes done by a pupil working alone, and often in various sized groups. It may be remedial or advanced.

Recognition of individual differences among pupils requires the school to give them much more time than now outside of regular class groups to engage in independent study. This activity aims to develop personal responsibility in pupils as they experience learning with maximum self-direction. Although pupils engaged in independent study may work individually or in groups of two, three, ten, or whatever number is appropriate for a given activity, the purpose is still individual progress.

Teachers provide pupils with the time and varied places for productive independent study. This arrangement necessitates greatly reduced pupil time in organized groups. Instead of teachers meeting with 25 to 35 pupils for each subject, each day, such meetings need not occur more than twice a week. Pupils spend the rest of the time in independent study. Each pupil at a level good for him--with materials and in places that especially stimulate him. Thus the amount of independent study determines the degree of the school's attention to individual differences among pupils. References listed at the end of this paper and subsequent statements provide more specifics for the changed teacher roles and other arrangements that independent study requires.

Provisions for Continuous Progress. Individualized learning requires that each pupil be placed in a situation where he can successfully complete each stage in the learning process and go on to the next without delay. This arrangement contrasts with the situation in conventional classrooms where bright pupils often are bored because they have to wait too often for others to catch up, or where less talented pupils are frustrated because the pace is too fast and the materials too difficult for them.

A nongraded program not only requires administrative changes in a school, but also a different arrangement of curricular content--as I will point out later--and variations in the nature of the teacher's assignments to pupils. Their *guidesheets* and oral instructions indicate to pupils with varied talents and interests what each of them needs and can do. Their accompanying *worksheets* provide alternative ways for doing it. Programmed instruction devices make continuous progress easier. Teachers then analyze pupil progress to evaluate the effectiveness of their assignments and the other provisions for independent study.

Discussion Skills and Interpersonal Relations. Different teacher roles and class organization are needed to teach each pupil how to express ideas orally in an effective manner, to listen to the ideas of others in order to react positively to them, to argue and to identify areas of agreement, and to respect other pupils and to gain their respect in the process. Nothing is more individual than our personal oral communication with others. With the one exception of "choral reading," it is the individual who speaks alone to someone else or to a group. The need for improvement in personal dialogues is documented by the difficulties individuals have in communicating, arguing, and reaching revised decisions and accords with others.

Today's conventional classrooms cannot provide the optimum setting or the right teacher roles for these goals. The maximum number of pupils in such discussion groups may not exceed 12 to 15 if each pupil has an opportunity to express himself in the reasonable length of time that the group meets.

The teacher role changes from lecturing, quizzing, teacher-pupil planning, and engaging in other activities erroneously considered as classroom discussion. Instead, the teaching role is that of an observer, a critic of the effectiveness of the discussion, a helper by teaching discussion techniques and evaluating the results, and by reconstituting the groups from time to time, not only to improve interpersonal relations among pupils, but to provide each pupil with the optimum opportunity to learn how to express ideas and to listen to others. Such goals simply cannot be achieved effectively in conventional classes. The focus in those classes cannot be placed adequately on the individual because the group is too large and the teacher is too much in charge.

Individualized Evaluation. If we believe in individualized learning, then individualized evaluation is axiomatic. Present evaluation practices get in the way of individualized pupil learning. Let me illustrate this need by suggesting negatively three present practices that teachers should stop immediately.

The first, and most crucial, practice to abandon is the constant comparison of the individual with other pupils in whatever group he happens to be in at the moment. Instead, the evaluation to be emphasized is the individual pupil's progress or lack of it. The comparisons needed are between what the individual is doing or knows *today* as related to comparable accomplishments earlier--a month, six months, or a longer period. Comparing an individual pupil with others in his group may give the top pupils a false sense of security; it is almost certain to give the bottom pupils a continuing sense of frustration and defeat.

A second practice to stop immediately is the oral quizzing of pupils in groups in order to find out whether individual pupils know what they are supposed to know. This practice embarrasses some individuals and conversely enhances the already-felt superiority of others. Moreover, teachers now spend one-fourth or more of class time on this activity--time that would be better spent by pupils in independent study and by teachers in professional activities that I will emphasize later. Better ways than oral quizzing are available to find out if pupils know what they are supposed to know. Teachers may observe progress as pupils work through programmed materials and when two or three pupils work and evaluate together. The teachers will give occasional written tests or engage in personal conversations with pupils to appraise progress.

A third practice for teachers to stop immediately is giving pupils multipurpose, single letter grades. What a pupil *knows* should not be combined with what he does. His punctuality and attendance record should not be combined with appraisal of his good behavior, style of dress, and creativity in special projects. The combined grade violates the recognition of individual differences as all of the foregoing and other factors become *one* grade which in turn determines such matters as rank in class, college attendance, success in job applications, and participation in school activities. Instead, the school needs to evaluate and report each goal separately.

The teacher roles required in individualizing evaluation are quite different from the foregoing three practices which they should abandon. Teachers in every subject need to state their most important purposes in pupil-performance terms that can be quantified, measured, and reported--each purpose described separately from the others. For example, what does a person who appreciates music do that is different from one who does not? What standards in physical fitness, recreation, and health will the school measure and report for each pupil? How many words per minute can a pupil type--with how many errors on an average? In all of these matters, and others, what progress is each individual making? Since the teacher lacks time to evaluate everything, what are the highest priorities for this grading period? Will a given purpose be evaluated by one teacher only--or by a team of teachers? The latter procedure is preferable in many instances.

Some readers may object to the omission of group standards. Teachers, of course, know group standards and goals. Standardized tests also provide group measures. Until higher institutions develop better bases for admission, the school may have to compute rank in class or report rank on examinations. However, these matters need not be in the public domain where all may see--and where the individual is unnecessarily punished or praised. Again, if we believe in individualized learning, then we must believe in individualized evaluation as outlined here. The determination of school excellence requires broad analysis of what is happening to each individual pupil in the school.

Relationships with Teachers. Individualizing pupil learning also requires that each pupil has an opportunity to relate to a teacher that is good for him. Today's schools deny pupils that privilege when they require a pupil to be with one teacher in junior or senior high schools all year to complete the subject, or all day for a year in the case of elementary schools. To require a pupil to spend that much time with one teacher whom he may not like, or a teacher who does not like him, interferes with the goal of individualizing learning. No condemnation of teacher talents is implied. A teacher who is bad for one pupil may be good for another.

Today's school counselors often deny this principle when they refuse to change a pupil's class assignment, telling him he must learn to get along with all kinds of people. So does the school principal err when he refuses to change a pupil's assignment because he fears many other pupils will wish to escape from a given teacher. The problem is attacked, as shown in the next section of this presentation, by recognizing the need for different tasks for the teachers rather than forcing them to do tasks they are ill equipped to do. Unfortunately, in today's schools the main place where teachers and pupils have choices in determining their preferred relationships to each other is in extra-class (co-curricular) activities.

This need for relating to a teacher good for the individual pupil requires the abolition of the self-contained classroom. In its place, pupils are in contact with several teachers, both in group situations and during their independent study. Teachers also need to be free from full time classroom assignments so a pupil can find and talk to the teacher he needs at a given time.

The question in determining school excellence is, what arrangements produce the best relatedness between individual pupils and teachers? Are these relationships enhanced by flexible schedules, independent study and the like? Is pupil attendance better and are referrals for disciplinary infractions fewer? What changes occur in pupil dropouts?

Do you really believe in individualized learning and accept the individual differences among pupils? If so, the five foregoing conditions must be analyzed in determining school excellence. What are the effects of the conventional program--or of any innovation--on independent study, continuous progress, oral communication and interpersonal relations, individualized evaluation, and relationships between individual teachers and individual pupils?

PROFESSIONALIZING TEACHING

Teacher organizations today seek more vigorously certain goals they have identified for a long time. Unfortunately, their emphasis sometimes is misplaced. For example, higher salaries and smaller classes are not the two most crucial matters in improving teaching and learning. Higher salaries help teachers to live better. They also bring a sense of community and national appreciation. I am in favor of higher salaries, but let us not confuse the issue.

Higher salaries do not automatically improve teaching and learning. The same can be said for smaller classes. Reducing class size or the teacher-pupil ratio in conventional schools--from 35 to 32 or 28.5 to 24.4, or what not--automatically will not improve what pupils learn or their success in college, as shown by many investigations for generations in this country and in many others. Reducing pupil numbers makes life somewhat easier for teachers because there are not so many papers to grade and not so many persons to contend with, but it does not change materially the quality of pupil learning.

There are at least four changes in teacher roles and school organization that can add not only to the professionalization of teaching, but to the improvement of pupil outcomes. The determination of school excellence requires evaluation of the following four conditions that affect the professionalization of teaching.

Attention to Individual Differences. Everyone knows that individual differences among teachers exist, but today's schools largely ignore the fact. There are uniform salary schedules, uniform teaching loads, uniform criteria used to measure teacher success, uniform retirement policies, and so on. All of those standardized administrative relationships deny individual differences among teachers. No other professional group worthy of the term expects all of its members to be general practitioners, all doing about the same tasks and all paid the same salaries based on training and years of experience.

Each teacher needs a situation in school where he may exercise best his individual talents and interests. No longer should teachers be expected to do everything that is needed for a given group of pupils. This requirement suggests team teaching with differentiated functions among teachers just as the school emphasizes individual differences among pupils. However, this suggestion does not imply a hierarchy of teachers. For example, I have never used the term, "master teacher," because that term implies that a teacher is superior in everything and, therefore, should be in charge. Such a concept still denies individual differences because a teacher is not superior in everything.

The determination of school excellence requires first that the school learns the special interests and talents of teachers. Also, the school deliberately employs a staff with divergent training, competencies, and interests. School policies then capitalize on those differences rather than to push all teachers into standard molds. The question is, what effects do self-contained classrooms, flexible schedules, television, and all other arrangements have on recognizing individual differences among teachers?

Auxiliary Personnel. The identification of what professional teachers must do, and what may be done by a variety of assistants, is a fundamental ingredient in professionalizing teaching. Different self-concepts and behavior are required. Many teachers today appear to have an I-must-do-it-myself complex. They say, in effect: "I must cover the subject;" "I can do it better than anyone else;" "I will not be replaced by a machine." All of these concepts are wrong to a degree. The professional teacher's duties must be defined in order to differentiate him from those other persons who play supportive roles by doing things the professional does not need to do.

Three kinds of assistants are required. Clerks are needed to keep records, check attendance, duplicate materials, grade some objective tests, and the like. Instruction assistants can supervise pupils engaged in independent study in a variety of places and otherwise help teachers in a variety of ways. Instruction assistants are persons with some preparation in the subject area and age group that the teacher works with, but not necessarily enough training for complete certification. Such persons come from the ranks of advanced college and university students, housewives, and retired or partially retired persons. *General aides* can supervise playgrounds, lunchrooms, and corridors, help small children with clothing, and perform other services that do not require clerical training or the preparation attained by instruction assistants. These auxiliary personnel can perform tasks which now occupy more than one-third of the time of teachers.

Of course, the teachers' relationships with pupils are changed when auxiliary personnel are employed. Teachers work with pupils more on the basis of referrals and appointments made by the assistants or by pupils themselves. They help their pupils understand the purposes of the assistants and how to work with them. Instead of knowing a little about a lot of pupils, the teacher then knows a lot more about a smaller number, those for whom he serves as teacher-counselor. But the teacher himself does not have to collect all the data.

There can be no real profession of teaching until teachers, their students, and the community generally, understand the relationships described in the preceding paragraphs. Certainly the workers in other professional groups such as medicine, engineering, and the like, long since have abandoned the roles comparable to those that teachers follow in today's schools. Again, any educational innovation--or the conventional school--is evaluated partly on the basis of what it does to separate the tasks for professional persons from what is done by auxiliary personnel.

Technical Devices. Today's teachers represent the only so-called professional group that has not escaped from the handwork era. The tools of the typical teacher still include only her physical voice and gestures, a chalkboard, and printed materials. None of us would respect or utilize a doctor, engineer, architect, or other person who did not possess up-to-date technical tools to aid him in his activities.

Teachers need to analyze carefully what they must do themselves and what pupils can learn for themselves through the use of a variety of technical aids to learning. Similarly, teachers can enhance their voices with amplification systems and use visual devices to illuminate their presentations. Remember, when a teacher talks, the size of the pupil group is irrelevant so long as each one can see and hear well. Effective motivation requires that teachers be reasonably up to date in the use of materials that enliven the television programs and motion pictures that pupils are accustomed to seeing outside of school.

There is no shortage of technical devices. Many of them have been around for a half century and more, but still have not found their way into instructional programs in the same manner that textbooks are used. Computer-assisted instruction is already a reality in experimental classrooms, but most teachers are still without it. They possess other technical aids only to a limited degree.

Teachers not only need to accept and learn how to use technical devices, but also they must become militant in helping school administrators and boards of education spend money differently so they can afford to provide the technical devices the teachers require. Much money now wasted on poorly conceived school buildings could be saved in order to purchase technical tools for teaching and pupil learning. The school building itself does little more than provide a comfortable and healthful environment; it is the technical devices that produce better teaching and learning.

The excellence of a school is measured by the quantity and quality of technical devices available and the effectiveness of their use by teachers and pupils. Those criteria are applied to conventional and the various innovative programs not only in relation to individualizing learning but also to professionalizing teaching.

Time and Places to Work. Professionalizing teaching is difficult so long as teachers are scheduled with pupil groups most of the school day. I have written and said for many years that teachers should not be scheduled with pupil groups more than one-half the school day. Teachers need time to prepare better, to keep up to date, to confer with their professional colleagues and with individual pupils, to plan independent study arrangements, and to improve the evaluation of their own efforts and the progress of their pupils. Teachers also need individual offices with at least quasi-privacy, other rooms for small group meetings and conferences, and places where instructional materials can be prepared with competent persons available to help the teachers.

Today's teachers, too often their supervisors, and even the community, seem to believe that a teacher earns his pay only when he is in front of 25 to 35 pupils, book in hand. That concept of the teacher's role must change. For example, most teachers should function once or twice a week as a presenter to or in charge of a relatively large group of pupils. For another 12 to 15 periods a week, the teacher should serve as a consultant, observer, and constructive critic of pupils meeting in discussion groups of 15 or fewer. These sessions should vary in length, with an average of around 40 minutes. The rest of the time, the teacher is engaged in a variety of professional activities of the types mentioned earlier in this statement, especially related to independent study and evaluation.

The implications of the foregoing proposals are clear. The professionalization of teaching does not result from higher salaries, smaller classes, or a fewer number of pupils per day. The evaluation of excellence in this regard calls for answers to different questions: Are individual differences among teachers recognized and treated effectively? What about the quality, quantity, and use of auxiliary personnel? What about technical devices? How much time and what places do teachers have for professional activities outside classrooms? Also, the worthwhileness of any innovative program is gauged by the answers to those questions.

REFINING CONTENT

The school innovations and changed teacher roles in connection with curriculum planning and development include identifying the differences between fundamental or *basic materials* and those which are in the realm of *creativity* and *special interests*. Today's content often confuses those two areas to the extent that pupils find much content required that they neither want nor need. So they lose interest, sometimes rebel, and many become underachievers. Even worse, they lack the time and energy to follow their special interests and to develop their unique talents. We need to separate the important kernels from the chaff and get rid of the latter as a required diet for all learners.

Required Learnings. So far as basic or fundamental education is concerned, teachers and curriculum experts need to identify the facts, concepts, skills, and appreciations that are *essential* in our society for anyone who is educable. Beyond that minimum, we also need to identify the content which is *desirable* for most people, and that which is *enriching* for the specially talented. It is possible that national groups will identify this curriculum content for all persons in the United States. Then, other groups can augment that content by adding materials needed by persons in a given state. Local teachers will complete the content by adding materials regarded as essential for the local community and region.

The foregoing foundational content needs to be arranged logically and sequentially so that the continuous progress of pupils is facilitated from the time they enter the school program until they leave to go to work or to continue in a higher institution. This required work is held to a minimum so that for all pupils in all school years there is time for additional study in areas where individuals have special talents and interests.

Most of today's curriculum planning and development projects add to the pupil's burden of required learnings rather than to reduce the burdens through refinement. The evaluative question is, what progress has been made toward identifying essential content? For example, what facts about the history of the United States are *essential* for the "good American?" What mathematics does the typical person--not the engineer or scientist--need? Is memorizing the names and dates of the Popes essential for proper religious behavior? And so on. Typically, pupils should be able to learn the *essentials* in one-half the time they devote to schooling so there is adequate time for each one of them in school or in the community to follow special interests, no matter how transitory, with the professional aid of an appropriate teacher.

Creativity and Depth. The teacher role in motivating, providing extra information, and making assignments, is to suggest what pupils may do to go beyond the fundamental or required content in creative ways or in greater depth. Such a program eliminates the outmoded "required and elective" system which often limits the breadth of experience for pupils in the upper years; for example, keeping them away from fine and practical arts or specialized work in mathematics or literature. The average pupil might complete the essential content required of all by the time he is sixteen years of age so that his basic education beyond that occupies only ten to twenty per cent of his school time. He always needs some time to keep up to date, refresh his memory, or correct wrong information learned earlier. That is true of all adults. Beyond that requirement, he devotes the rest of his time to creativity and depth studies in the world of work or advanced studies leading to the university.

So far as content is concerned, the teacher's role is to use what has been developed nationally and regionally, not wasting time on decision-making in this regard but accepting or criticizing what the experts have done. His major efforts concern the local content that is added to the basic education and to the development of meaningful and productive creative and depth educational programs for his pupils.

SOME ADDITIONAL CONSIDERATIONS

Today's schools largely relegate decisions about educational facilities--buildings, grounds, supplies, equipment, and money--to supervisors and administrators. Teachers give advice when required to do so. Sometimes they become militant about higher salaries and smaller classes.

Incidentally, in these days of increasing teacher militancy, it is important that teachers be militant about the right things. Some of their leaders and their organizations are not considering the teachers' professional interests, the learning of their pupils, and the refining of content as described earlier in this statement. In fact, they are working in the opposite direction.

Innovations require changes in the way that money is spent and other facilities are utilized. Boards of education and school administrators need to change their perspectives about facilities in order to encourage innovations and to support them adequately. Teachers need to help in this process.

A school district so disposed can easily save enough money while constructing a new building or remodeling an old one to purchase needed technical aids to teaching and learning in quantities far beyond those which are provided today. Two references, one on school buildings and the other on "the right questions," listed at the close of this statement, deal with this topic.

Teachers can have the services of assistants, a schedule that provides time for professional activities as described earlier, classes of 15 or fewer pupils, and the like, without adding to the district's tax burden. The requirement is that teacher roles and the methods of determining excellence are changed as I have described. There is no sound reason for existing teacher-pupil ratios if learning is individualized, teaching is professionalized, and content is refined.

INTERPRETATION AND SUMMARY

What is an educational innovation and why? A friend recently said that where he came from the term could be used to describe panic bars placed on the school's exit doors. In other places, dial access systems are considered less innovative than computerized carrells. The simple dictionary definition, "something new or different," is scarcely adequate for decision-making in education. A conceptual basis is required to categorize and evaluate educational innovations.

Too many schools adopt innovations mainly because others are doing so. Team teaching and flexible scheduling are fashionable. So, the only questions asked in some schools are, "What is in this year, and how can we sell it to teachers, students, and the community? We want to follow the latest fad. How can we do it quickly and easily--without really changing anything basically?"

Are there any fundamental guidelines for considering educational innovations? I think so. Moreover, I believe that the effectiveness of any educational innovation in comparison to the practice it replaced must be judged on the basis of fundamental guidelines.

This presentation emphasizes some basic ideas:

1. An educational innovation is effective to the degree that it furthers three fundamental educational goals as defined in this statement:
    a. Individualizing learning
    b. Professionalizing teaching
    c. Refining content
2. The innovation is viewed in relation to other aspects of teaching and learning.
3. Evaluation of the innovation requires different techniques for analyzing what happens to pupils, teachers, and content.
4. Whether an innovation in a given school constitutes following-a-fad or making fundamental-changes depends upon the conceptualization of the new procedures by all persons concerned.
5. Teachers and pupils have different roles, methods, and behavior in an innovation that is successful.

This presentation suggests two generalizations that should spur principals, teachers, and those that support them, to intensive study and action. First, there is little inherent magic in the educational innovations that most of us urge. That is why in so many cases the evaluators show no significant differences in pupil learning even though the teachers and pupils enjoy the changes that television, independent study, flexible schedules and the like, bring. Second, basic improvements in teaching, learning, and content can not be made effectively in the framework of the one-teacher-thirty-pupil self-contained classroom, or with the six or seven period day. Nor will schools be better merely by reducing the teacher-pupil ratio, by diminishing the number of pupils per day for English teachers, or by adding calculus, four years of foreign language, or any other extra courses to the over-crowded curriculum of the conventional secondary school. No, those superficial arrangements will not improve teaching, learning, and content to any marked degree.

Schools in the United States and in other countries can be improved mightily. We possess in the latter third of the twentieth century the know-how to individualize learning, professionalize teaching, and refine content. The question is, do we have the patience, the willingness, and the drive to change teacher roles, methods, and behavior? Will teacher organizations be militant about the right things, the important matters? Will principals develop a staff organization to free themselves from the trivia of management details so they can work with teachers to improve instruction? Will university researchers come out of their cloisters to work with schools to improve teaching and learning? Will we ask the right questions and collect the appropriate data in determining the excellence of teaching and learning and, therefore, the educational quality of each local school? I think so. Anyway, as a true believer, I am by nature an optimist.

Summary

Dr. Trump discusses many items that are significant to educators contemplating individualized instructional programs. Perhaps the most crucial factor to be considered in the development of any innovation is the rationale that motivates the desire for change. There is only one justifiable reason for making any change in the existing program: the need to improve the quality of instruction for each student.

Each teacher and administrator must evaluate the quality of teaching and learning in his school. Using Trump's criteria of individualized learning, professionalized teaching, and refined curriculum content, educators need to determine specific shortcomings and then design programs to alleviate them.

The remaining sections of this book are designed to give ideas and practical suggestions to those interested in improving the quality of the instructional program in their school.

Resources

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PART II

NEW PATTERNS FOR THE UTILIZATION OF STAFF

Introduction

One of the most significant factors in the successful implementation of an individualized instructional program is the effective use of staff. Consequently, over the last ten to fifteen years many programs have been developed featuring staff utilization patterns that deviate from the traditional one teacher - thirty students model. Some of these new patterns include team teaching, differentiated staffing, and the use of instructional aides.

Most staff utilization programs that have emerged during the past decade received impetus from studies conducted by the Commission on the Experimental Study of the Utilization of the Staff in the Secondary School (J. Lloyd Trump, Lloyd Michael) and the School and University Program for Research and Development (Francis Keppel, Judson T. Shaplin, Robert Anderson). While these two groups were working at the national level, many universities and public schools began to develop staff utilization programs. Robert Bush and Dwight Allen were working at Stanford to establish criteria for time and staff allocations and the development of computer techniques for student scheduling. At the same time, William Georgiades of the University of Southern California in conjunction with various public school districts in Los Angeles County began to study practical methods of giving teachers greater flexibility of time and group size. Out of this study grew the concept of the Pontoon Transitional Design.

Trump and the National Association of Secondary School Principals continued their work with various types of staff utilization programs. As a result of a private grant, the NASSP Administrative Intern Program was developed to train potential administrators for new leadership roles in innovative schools. It was through this intern program that J. Lloyd Trump and William Georgiades became associated. Under the leadership provided by these two men and with funds from the Danforth Foundation, the Model Schools Project was conceived and organized. Co-sponsored by the National Association of Secondary School Principals the project is attempting to combine several important innovations in the development of programs for individualizing learning.

The articles in this section are designed to give the readers some practical ideas for the effective utilization of staff. In the articles about the Model Schools Project, Drs. Trump and Georgiades describe a comprehensive approach toward the implementation of an individualized instructional program. In "The Pontoon Transitional Design for Curriculum Change." Georgiades describes a gradual approach to new staff utilization patterns and curriculum innovation. Dr. John J. Gyves presents practical examples of how a middle school has attempted to individualize instruction over a period of four years. The vehicle for this gradual approach to change was the Pontoon Transitional Design.

The authors in this section possess backgrounds that qualify them as experts in their respective fields of endeavor. Dr. J. Lloyd Trump was introduced in Part I. Dr. William Georgiades, who at present holds the position of Associate Dean of Education, University of Southern California, and Associate Director of the NASSP--Danforth Foundation Model Schools Project, is a leader in the development of individualized learning programs. Georgiades, the developer of the Pontoon Transitional Design, has taught at both the secondary and university levels. He has worked as a consultant with many schools and districts throughout the country. Dr. John J. Gyves, Principal of Clifton Middle School, Monrovia, California has held teaching and administrative positions at both the middle and high school levels. His practical experience in building transitional programs that lead toward individualized instruction has made him a valuable resource to many administrators and teachers in the southern California area.

NASSP MODEL SCHOOLS PROJECT

By William Georgiades
J. Lloyd Trump

The National Association of Secondary School Principals Model Schools Project, partly supported by the Danforth Foundation, seeks to demonstrate how a network of schools may change their programs from relatively conventional ones to broadly innovative, individualized instructional and learning programs during a five year period. This goal requires providing appropriate means of staff differentiation, realigning the leadership priorities of the principal, refining the curriculum, defining significantly different roles for pupils, and using more effectively the "things" of education.

BASIC ASSUMPTIONS

Three basic assumptions undergird the change strategy characteristic of the Model Schools Project:

1. Innovations often have been superficial rather than real. Unless teachers and pupils exhibit changes in the ways in which they behave, no change really has occurred. Different pupil and teacher roles are a prerequisite, or at minimum a corequisite, if significantly more effective instructional programs are to emerge. The project assumes that it is possible to make major organizational changes, such as introducing "team teaching" or "flexible scheduling" without actually touching or altering the ways in which pupils and teachers function.
2. Innovations have not been adopted in a systematic-interrelated totality. Consequently, an innovative variable, whatever its potential, has often been nullified by conventional practices in other areas. Change in school systems must therefore be planned from a "total" or "gestalt" perspective.
3. In somewhat the same ways that learning is "individual," change also is "individual" or "personal." Thus, new roles for pupils and teachers emerge to the degree that such persons interact and participate in the development of such roles. Self-help has the potential ultimately of being more productive than external help. If the change process is to be internalized, planning must provide for an appropriate balance between self-help and external help.

OPERATIONAL PRIORITIES

The NASSP Model for secondary schools provides five basic

Georgiades, William and J. Lloyd Trump. "NASSP Model Schools Project." Journal of Secondary Education, Vol. 46 No. 4, April, 1971, pp. 168-171.

changes that are essential to produce significant gains in pupil learning and the professionalization of teaching and supervising. These essential elements are interrelated in a total pattern. Until all of the following five model elements have been effected, one cannot expect a substantially different school climate with newly emerging roles on the part of teachers, administrators, and pupils:

1. The school principal will devote about three-fourths of his working time to the improvement of instruction. What teachers do in an innovative program must be quite different from their previous activities if the learning of pupils is to improve significantly. Therefore, the principal first needs to develop a staff to help with administration and supervision to free himself from many duties that now occupy the major portion of his time and energy. His role becomes increasingly that of an instructional leader rather than a plant manager. He uses the same instructional-learning procedures in working with teachers that he expects them to use with their students.

2. The instructional staff will be reorganized. Teachers will work with the help of clerks, instruction assistants, and general aides who, under their supervision, can take over certain tasks which now consume much of the teaching day. Teachers will have about two-thirds of the school day to restudy what they do, to prepare, to improve evaluation, to serve as counselor to 30-35 pupils and otherwise to change their roles so that their competencies are utilized more effectively.

[illegible] Pupils will have more time for independent study, that is, to experience a variety of learning activities away from the constant supervision of teachers. Teachers will provide more materials for self-directed study and appraisal. The pupil's day will be spent primarily in "informal, planned learning environments" in and out of the school as contrasted with "formal learning environments" in which the teacher is the primary presentor. At the same time the Model requires specific policies for pupil accountability and evaluation.

4. The innovative curriculum will offer continuous contact with essential materials in the basic areas of human knowledge. More and more of these materials will be drawn from the real world that the pupil knows rather than the adult world of the teacher. Such a curriculum, based on minimal essentials, will also provide depth studies for specially interested students. Pupil schedules will evolve with eight large-group presentations and eight small-group discussions per week. The remaining 22 hours a week the pupil will spend in various forms of independent study as determined by him and his teacher-counselor.

5. There will be more productive utilization of the "things" of education. Buildings, equipment and supplies, and the use of money will be more directly related to instructional goals and objectives; product output will be evaluated in association with materials input.

STRATEGY FOR IMPLEMENTATION

The change strategy in the Model Schools Project focuses on the in-depth involvement of teachers, pupils, and administrators in the development of their newly emerging roles. Such concepts, as individualized scheduling, independent study, presentations (large-group instruction), small-group discussions, differentiated staffing, different teacher and supervisory roles, teacher-counselors and professional counselors, curriculum essentials, learning sequencing, motivation and evaluation must be internalized if new roles are to become a reality.

Teachers, pupils and administrators have studied the model; they have listened to tapes which discuss the above concepts; they have viewed films and other materials; and they have generated in-depth discussions. Principals, vice-principals, and assistant superintendents in charge of instruction have participated in discussion workshops devoted to the concepts of the model. These workshops emphasized involvement with minimal emphasis on motivational presentations.

The "self-help" assumption undergirding the project is further implemented through the installation of conference telephones in each of the MSP schools to facilitate a discussion network among pupils, teachers, and administrators. Faculty may work with faculty even though separated by 3000 miles. Materials developed by individual schools will be made available to others through a "loose-leaf" notebook publication coordinated by NASSP. Thus, both written communication and communication at the discussion level will have been facilitated.

The change strategy for the MSP also includes continuous self-assessment, appraisal and feedback with each school serving as its own control. The following few illustrations show procedures designed to help persons see themselves on a "growth continuum" as they move from existing roles to newly defined roles:

1. Principals keep logs and make progress reports relating to their disposition of time. They are reorganizing their office structure to make time available for their new role as a manager of learning strategies for the total faculty.

2. Teachers are beginning to compare the use of their time with the objectives which have been established in the Model. They are seeking to talk less and to assist pupils in assuming more responsibility for their own learning. They are going through the process of self-assessment with the use of such materials as those prepared by Flanders and Gallagher. In some instances they are video-taping classes to analyze their role as it relates to the teaching role established within the framework of the Model.

3. Strategies for self-assessment and appraisal on the part of pupils have included self-evaluation, both cognitively and affectively. Self-administered, as well as

external measuring devices and attitudinal scales are being utilized. Pupil logs are also being kept of both in-school and out-of-school activities.

The change strategy also includes a different role for "the project staff." This staff includes only two persons, each devoting less than one-half time to the project. The 35 project schools mainly were self-selected after their personnel studied descriptive materials and listened to explanations by one of the staff. On the basis of these local discussions, each faculty and governing board determined by majority vote whether or not to participate in a five-year program involving transitional stages. The closeness of the relationships between individual schools and the part-time project staff will also vary in order to provide further evidence on the significance of project staff-school relationships. The role of external consultants, project staff or otherwise, is changed and minimized as another aspect of placing increased responsibility on the local school staff.

SUMMARY

There has been a history of a decade or more with increased tempo in innovative efforts in American education. We seem to be in the midst of a plethora of so-called "innovations." However, many attempts at educational change have neglected the necessity for changed patterns of administrative, teacher, and pupil behavior. Change has frequently been envisioned as a "purchasable" commodity.

The Model Schools Project of the NASSP is committed to the principle that change does not take place until new patterns of thought and conceptionalization have been internalized. Consequently, the emphasis is on the self-help approach to change. The focus is on the total involvement of persons: pupils, teachers, administrators, and lay persons.

The Project has one other dimension worth noting. A decade and more ago a major emphasis in projects was to sell schools on the idea of doing something different to demonstrate the viability of changed organizational or curricular techniques. The emphasis typically was on probing for better ways of doing things, sometimes with vaguely prescribed methods. Some projects at the other extreme developed specific curricular patterns of methodology and then held institutes to train teachers and principals in the new approaches. The present NASSP Model has prescribed relatively specific requirements in such areas as teacher-pupil ratio, time and places for independent study, methods for individualizing pupil schedules, differentiated staff, time allocations for teacher activities, staffing patterns for supervision, required group meetings, sequenced curriculum, and evaluation of both pupil progress and the effectiveness of the changes. No school was admitted to the program without commitment by the governing board and staff to a five-year effort, granting a reasonable transitional period. The goals are clearly defined; the flexibility lies only in the process of attaining them. The major responsibility in this process is with the schools; the project staff deliberately plans to establish a somewhat typical role with different kinds of relationships.

We hope that this attempt to combine in 35 schools all of the ingredients which are essential for meaningful change will enable the profession to assess and weigh more effectively the many variables that must be considered in planning new programs in education.

Most educators acknowledge the necessity of change, and no educator of any stature seeks to avoid it. However, few efforts have been made to examine the entire educational process, with a commitment to a wholesale change in all the aspects of teaching and learning (the principal's role, teaching roles, individual student roles, curriculum revision, evaluation methods, money, and facilities), while utilizing existing educational facilities. The model discussed here is a combination of old and new ideas into a total system, in which innovations in every aspect of the educational process have to occur.

DOING BETTER WITH WHAT YOU HAVE

NASSP MODEL SCHOOL PROJECT

By J. Lloyd Trump
William Georgiades

Our purpose today is to help anyone in any place to improve the quality of teaching and learning. Your school, old or new, in ghetto or suburb, poorly supported or richly endowed, can be better than it is. How to do it is our mission. The basic requirement is that you know where you are going, that your educational goals are clear.

The NASSP has developed a model to help you. We'll tell you about that model and, in the process, suggest some alternatives for you to consider in making changes in the right direction in your school--doing better with what you have.

Some persons argue that any change is better than no change at all--but that is a useless controversy. The directives from pupils and teachers are too clear these days. Schools will change.

The NASSP Model is being implemented in a project, supported partly by the Danforth Foundation--with 34 schools participating. How will these schools be different? What should we call them--more humane schools because each individual gets more attention? Some people in one of the

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Trump, J. Lloyd and William Georgiades. "Doing Better With What You Have. NASSP Model Schools Project." The Bulletin of the National Association of Secondary School Principals, Vol. 54, No. 346, May, 1970, pp. 106-133.

model schools, a junior high school in southeast Washington, D.C., call it the NOW School.

Here are the words to a song they have written, under the direction of Thelma E. Robinson, music teacher:

There's a crazy little rumor
  And it's spreading everyday;
That the school where I am going
  Wants to change in a new way.
Where they say that I can study mostly
  What I want to know--
And if that is true that school will be
  The place I want to go!

Teachers there will be a help to students
  Who will really want to study,
Yes, really study.
And it might be fun to want to know something
  That causes me to study,
Oh, really study.

And so if that crazy rumor
  Means that school will change its rules--
I will gather all my friends
  And we will fly right to the school.
We will call our school The NOW School--
  And we'll go there everyday!
And God bless the Model Project
  That has shown us our new way!

SOME OLD IDEAS

The National Association of Secondary School Principals has the Model for the NOW School. No one else has such a comprehensive program. We have been working a long time with some very old ideas. The roots of our Model are deep.

Quintilian stated the philosophy almost 1900 years ago:

> Moreover, by far the larger proportion of the learner's time ought to be devoted to private study. The teacher does not stand over him while he is writing or thinking or learning by heart. While he is so occupied, the intervention of anyone, be he who he may, is a hindrance.

The foundations also are in pronouncements of Plato, Socrates, the Humanists, in Herbart, Rousseau, Morrison, William Wirt, Carl Rogers, and thousands of others, past and present.

Our contribution in the NASSP is to put a lot of those old ideas, and some new ones, into a total commitment for a model--or system--where changes in all aspects of schools have to occur. We have been working on quite a number of school improvement projects, for a long time. A few examples are the work experience project with the NYA in the late 1930's; Planning for American Youth in the 1940's; the staff utilization studies in the 1950's and 1960's; and the Administrative Internship as a means for better schools, also in the 1960's.

The NASSP staff utilization studies developed several publications that attracted world-wide attention. The first, *New Horizons for Secondary School Teachers*, suggested a broad spectrum of studies while indicating some important choices that principals had to make. The second publication, *Images of the Future*, attracted even more attention. We put ideas from the staff utilization studies, supported by the Ford Foundation, into a frame of reference and described our teaching and learning system. The report at the end of the project, *Focus on Change--Guide to Better Schools*, still sells a lot of copies with translations into several foreign languages.

AND NO BELLS RING

Ten years ago, at the Portland, Oregon, NASSP Convention, we premiered a film, . . . *And No Bells Ring*. Hugh Downs, the narrator of this film, was then with Jack Parr on the Tonight Show. He went from there to the Today Show. Incidentally, at that time I had just left the University of Illinois (having been employed part-time by the NASSP) to be in Washington as a full-time NASSP employee. Ten years later the NEA film service finds that this film is still in considerable demand.

We produced a number of additional audiovisual programs with accompanying booklets to clarify further the instructional system we proposed. Starting in 1962 we had a new vehicle for working with the schools: a project also supported by the Ford Foundation, The Administrative Internship in Secondary School Improvement. We developed two film strips: *Focus on Change* and *Focus on the Individual--A Leadership Responsibility.* A 16mm sound, color film, The Present Is Prologue, told principals how to organize their schools differently and proposed methods for working more effectively with teachers. A recent film, *Answers and Questions*, deals with curriculum irrelevancy and other problems that pupils and teachers face and suggests some questions for further discussion.

We tell you these things that you may understand better the origin and development of our NASSP Model. A lot of so-called new ideas today need the model because a failure to change all aspects of the school program limits the possible gains of such innovations as television, programmed instruction, flexible scheduling, micro-teaching, and the use of varied learning strategies--including educational games, total environment education, various curriculum projects, the school-within-a-school, year-round school, and many more. These innovations fail in most cases to produce pupil gains and to help teachers because they try to function in self-contained classrooms, or with poor staff utilization, and with principals who sometimes have the wrong priorities.

So now we return to a more detailed explanation of the

NASSP Model, to show you how you can take steps toward it in your school and do better with what you have.

OUTLINE OF THE MODEL OF THE NASSP MODEL SCHOOLS PROJECT

1. BASIC GOALS:
   a. To provide a program with varied strategies and environments for learning through which all pupils, regardless of differences in individual talents and interests, may proceed with gains.
   b. To provide conditions for teaching that recognize differences among teachers and capitalize on the special talents and interests of each person.
   c. To define clearly the role of the professional teacher as separate from the roles of clerks, instruction assistants, and general aides.
   d. To separate the principal's role in instructional improvement and general supervision from management tasks that can be done by other persons.
   e. To emphasize in curriculum revision the distinction between those learnings that are essential for all pupils, and those learnings which are specially relevant for some of them.
   f. To reduce required learnings in all subjects to provide more time for pupils to follow their own interests and talents.
   g. To develop better methods and materials for evaluating changes in conditions for learning, teaching, and supervising, as well as changes in the use of the things of education; also for evaluating the effects of the program on pupils, teachers, and principals.
   h. To utilize school funds, supplies and equipment, and other school facilities differently to produce better results as described under Item "f" without necessarily having more of the things of education.
   i. To discover better ways of utilizing outside consultant help not only within a given school but also through audiovisual devices to spread the consultants' talents among other schools.
   j. To analyze the process and the progress of change among schools.
2. BASIC CHARACTERISTICS OF THE PROGRAM:
   a. The principal spends three-fourths of his time working directly with teachers to improve instruction and learning.
      1) He organizes learning for teachers according to the same general principles that he expects teachers to follow with their pupils.
      2) He selects assistants qualified to handle the school's managerial and other tasks only indirectly related to instructional improvement.

b. Differentiated staffing and other arrangements produce changed roles for teachers.
   1) Instruction Assistants (average of 20 hours per week per teacher) oversee pupils' independent study, etc.; Clerks (average of 10 hours per week per teacher) keep records, etc.; General Aides (average of 5 hours per week per teacher) perform tasks not requiring competence in subject areas or clerical skills.
   2) Teachers are scheduled an average of not more than 10 hours per week with pupil groups (2 hours with large groups, 8 hours with small); the balance of 20 hours, mostly on school premises, are for keeping up-to-date, developing materials, evaluating, conferring, and supervising.
   3) Most teachers serve a new role as teacher-counselor (helping about 35 pupils individually to plan, schedule, and change their independent study time and collecting information about each pupil's progress and difficulties).
   4) Teachers work individually in offices or in groups organized by departments or on some other basis.

c. Individualized learning methods emphasizing motivation, continuous progress, self-direction, individual scheduling, personalized evaluation, and attention to personal needs and interests, while maintaining pupil accountability.
   1) Pupils are required, all the years they are in school, to attend 8 hours of motivational presentations and discussions each week in all 8 areas of human knowledge (30 minutes in a large group and 30 minutes in a small group per week in each area). These groups are scheduled by the school office.
   2) Pupils have 22 hours per week for scheduling independent study in the school or community (distribution decided by pupils and their teacher-counselors, changeable by them at will with joint approval). A professional counselor or the principal resolves disagreements, if any, between a pupil and his teacher-counselor. These pupil schedules are made, changed, and recorded by teacher-counselors and their secretaries.
   3) Each pupil covers required content at his own pace, using specially prepared materials. Much of this work may be done cooperatively in various-sized groups, as established by students themselves.
   4) Evaluation for each pupil is in relation to

his own past achievement in a variety of educational goals. Since teachers cannot evaluate every aspect of learning, priorities are established.

5) Attendance of pupils is regularly checked and the amount of each pupil's progress systematically reported by the instruction assistants who supervise independent study.

d. Curriculum revision separates basic, essential learnings from other learnings that mainly are appropriate for pupils with special talents and interests.

1) Materials are organized to provide self-direction, self-motivation, self-pacing, and self-evaluation by pupils themselves.

2) The amount of depth and creative studies in relation to required, basic studies increases with the age and maturity of individual pupils.

e. Improvement of teaching and learning requires that money and facilities be utilized differently.

1) Financial input is analyzed in terms of gains (product output) in the foregoing items "a," "b," "c," and "d" (principal's role, teaching roles, individualized learning, and curriculum revision). Improvements in those areas do not necessarily cost more.

2) Most conventional classrooms become learning centers (both kinds: study and work) for independent study; a few rooms are divided for small-group meetings and for teacher offices and workrooms; a few spaces are needed for large-group instruction (motivational presentations).

3) Priorities for new construction or for purchase of supplies and equipment are based on what will produce the most good for the most pupils, in terms of the goals of the teaching-learning methods in the Model.

f. Increased emphasis on evaluation is essential to provide feedback for directing further improvements, and to produce confidence in the changes.

1) The emphasis is on behavioral changes when evaluating individual pupil progress.

2) Analyses will reveal changes made in conditions for learning, teaching, supervision, curriculum development, and use of funds and facilities in school and community.

3) The effects of the changes on pupils and teachers en masse, on principal and assistants, and financial efficiency will be measured.

3. UNDERLYING CONDITIONS:
   a. Only as administrators, teachers, and pupils are totally committed to all of the project's goals will there be basic comprehensive changes as envisioned in the Model.
   b. Each school will provide reports evaluating the project's effects on pupils, teachers, supervisors, curriculum, facilities, and money. The goal is to produce improvements as compared with past accomplishments in each school as measured by earlier data gathered in the school and by new evaluation techniques that the project will develop.
   c. In return for more comprehensive evaluation reports, the parents, community leaders, central administrators, board of education members, and other persons in the community power structure will offer constructive assistance and suggestions based on the data they receive.
   d. The school will work to achieve the Model as rapidly as is reasonable in the local setting. A two-year transitional period, or less, should be adequate.
   e. The schools will refrain from seeking unnecessary publicity, especially during the transitional period, but will cooperate in preparing reports for distribution by the project.
   f. Two additional key words for progress are self-study and professionalism. Conversely, the following methods of stimulating change are deemphasized: visits to other schools, use of outside consultants for motivating change, purchase of externally developed technology and materials, construction of new or additional facilities, and substantial increases in school expenditures per pupil. However, communications among the schools with similar interests and problems is encouraged to further the goals of self-study and professionalism.

SOME TRANSITIONAL STEPS TOWARD ACHIEVING THE MODEL--
DOING BETTER WITH WHAT YOU HAVE

A. Increased attention by the principal to the role of working with teachers to improve instruction.
   1. Keep a log for two weeks or a month to show what the principal does (for suggestions on how to keep such a record, see NASSP Bulletin, January 1969, Chapter 9, pages 61-66). Then summarize the data in a report to the superintendent, calling attention to the time the principal now spends on routine management and other duties that persons with less professional training but more specific preparation might do (see the same issue of the

NASSP Bulletin, pages 119-123, "The School Principal"). Show how the school district can not afford to have principals spend their time on subprofessional activities. Conclude the report by making positive recommendations about what the principal will do to work with teachers when the changes are made.

2. Set up an "instructional system" to help teachers learn about the concepts in the NASSP Model Schools Project. Here are the three basic parts of any instructional system--with special reference to achieving the Model:
    a) Make a motivational presentation (30-40 minutes) at a general faculty meeting--that is, large-group instruction, the purpose being to encourage independent study. Make the presentation personally, as an overview of the MSP as shown in the outline, or use a 40-minute audiotape with slides ($7.00 from the NASSP). Tell teachers about materials placed in the faculty study center.
    b) Organize a faculty study center with materials for reading and viewing. Ask the NASSP for a suggested bibliography. Some materials are free; others are inexpensive. The other aspect of independent study--going beyond reading, listening, viewing, and thinking--is doing. Help teachers to plan, carry out, and evaluate minor projects as described later in this statement.
    c) Plan a systematic program of small-group discussions with teachers, some groups being departmental and others cutting across those lines. The principal is the consultant and observer of progress. Read the NASSP materials on "Small-Group Discussion."

B. Teacher Roles in the MSP

1. Reduce scheduled class meetings per week to give teachers time for independent study, including the development of materials for pupils' continuous progress. Classes may meet 2, 3, or 4 times per week (same length of time as before) instead of 5. Someone will have to supervise the pupils. Use some teachers while others are free. Better still, use some instruction assistants.
2. Help teachers to develop continuous progress materials for pupils to use.
    a) Use the present, basic textbook--the author(s) provides a sequence, content, and suggested activities. Teachers doubtless will want to supplement the textbook with recorded explanations and tests for pupils to use to help their own self-appraisal.

b) Add "guidesheets" that tell pupils what they are supposed to learn and "worksheets" that tell them what to do--read, write, view, listen, discuss, practice, experiment, etc.

c) Make at least one "learning package" to understand better what more-sophisticated self-directing, self-motivating, self-pacing, and self-evaluating materials can do for pupils.

3. Help teachers to improve their methods in conventional classrooms. Read "Secondary Education Tomorrow: Four Imperatives for Improvement," NASSP Bulletin, April, 1966, pp. 87-95.

a) Reduce the amount of time that teachers talk to the entire class to not more than 20 percent, and preferably less. Make this talk primarily motivational, only giving information not readily available elsewhere or making assignments otherwise not specified in writing.

b) Increase the quantity and improve the quality of independent study. Conventional independent study now is called supervised study in classrooms or work in study halls, libraries, laboratories, gymnasiums, and so on, plus homework--either covering assigned activities or special projects. Add a tape recorder or two to the classroom and a simple filmstrip and slide projector so pupils can listen and view as well as read and write. Add to the reading materials by having pupils bring materials from homes, offices, and so on. Make assignments more specific and provide alternatives. Provide self-testing materials. Encourage pupils to help each other.

c) Instead of the conventional (and almost useless) "recitation" or total-class discussions, divide the class into three groups for "small-group discussion" or into smaller "buzz groups." Teach pupils how to discuss and how to relate better to each other.

d) Improve evaluation by making less use of A, B, C, D, F (e.g., only for the six-weeks grade) and place more emphasis on what pupils actually know and can do. Compare each pupil with his own past achievement instead of against the group. Once in awhile, at least, evaluate something in the affective area.

C. Individualize Learning for Pupils

1. Divide the course into chapters, units, major sections, or similar arrangements, as suggested under the foregoing item 2a. Then encourage each pupil to complete the required learnings at his own pace. As each one completes the course, or a segment of it, permit him either to do a special project or to go on to the next segment. When he

completes the course, allow him to take some other subject or activity for the rest of the year. If he can not cover the course in 9 months, permit him to take more time.

2. Abandon the conventional schedule for a week, once or twice a year, to permit pupils to study or work on subjects of their interest inside or outside the school--with appropriate accountability.
3. Do the same as in No. 2, using one day of each week--Wednesday, for example.
4. Reduce class meetings in some or all subjects from 5 per week to 4--or 3 or 2. Have no fear; pupils will do as well on standardized tests or conventional teacher-made tests. Pupils spend the time gained in classroom-resource centers under the supervision of instruction assistants or some of the teachers.
5. Introduce the changes suggested elsewhere in this article, especially under D and E.

D. Alter Conventional Curriculum Patterns.

1. Go through a part or all of one or more courses to separate the required learnings into a and b:
    a) The minimum which every pupil must complete to receive a "passing" grade.
    b) Additional requirements to earn specified higher grades.
2. Develop a series of mini-courses--electives which meet for six weeks, or whatever time is decided, so long as it is less than one semester.
3. Make special correspondence courses available as needed.
4. Schedule work experience or special studies in museums, galleries, etc., away from the school--with proper accountability.

E. The Use of Facilities and Money.

1. Reduce overcrowding by introducing more independent study, large-group instruction (presentations), and small-group discussion vis-a-vis use of conventional classrooms which require more room per pupil.
    a) Remove a wall between two classrooms and substitute chairs for school desks (arranged in semi-circular fashion to face the presenter now stationed in the front, on the window side now covered by a curtain or green paint); this facility houses twice as many pupils as in conventional classrooms.
    b) Install two partitions in a conventional classroom to produce 3 small-group discussion rooms, substituting chairs in a circle for school desks; this arrangement accommodates 50 percent more pupils in the same space.

    - c) Change classrooms into study and work centers for independent·study; schedule more pupils for some supervised study and work in the community with appropriate arrangements for accountability.
    - d) Convert corridor, lobby, and cafeteria spaces into independent study areas; pupils can walk through such areas while other pupils are working, especially under flexible and individualized schedule arrangements.
  2. Make better use of the potential talents of the professional staff:
     - a) When a teacher retires or leaves, use the salary to employ clerks, instruction assistants, and general aides as described in the January 1969 issue of the NASSP Bulletin, pages 123-126.
     - b) Gradually increase the number of qualified adults that serve the pupils while reducing the number of certificated teachers, at the same time increasing the time that teachers have free from scheduled classes of pupils.
  3. Use individual audio tape recorders and make 2 x 2 slides instead of using more expensive video tape recorders and film projectors--if funds are limited. Always investigate how to get the most benefits for the largest number of pupils with emphasis on individual or small-group use. No criticism of more expensive technological installations is implied; it is only a matter of priorities. Also, pupils benefit from personal use and from locally developed materials.

F. Evaluation.
  1. In addition to the A, B, C, D, F--or, better still, in place of letter grades for one grading period--report more accurately what each pupil knows or can do in one or two basic goals of instruction; this procedure requires that those goals are defined in behavioral terms.
  2. Evaluate some special project, using as many affective goals as you wish, and indicate where the pupil's achievement falls on a continuum from one of the best the teacher has ever observed to one of the worst. Some illustrative goals are: creativity, persistence, use of human resources, use of material resources, value to others, and the like. Each term is defined and a mark placed on a point of the continuum: ______x______________________

     Best ______________________ Worst

OTHER BRIDGES TO INDIVIDUALIZED EDUCATION-- THE PONTOON DESIGN

During the past decade, a new vocabulary has been emerging in American educational practice. Terms such as "team-teaching," "small group discussion," "large group presentations," "independent study," "flexible scheduling," and many others are commonly used in textbooks and in speech making at all levels of education. Hardly an educator of any stature or a school system of any consequence can avoid exposure to "innovations." However, few constructive efforts have been made to examine what is meant by the term "innovations."

Whereas a decade ago it might have been questionable for an educator to anticipate substantial innovation, today if one excludes such a term from his vocabulary he is likely to be assigned to Dante's Fourth Circle. In a climate where innovations are ill-defined, if defined at all, change is conceived to be a panacea. Consequently, sound strategies for the implementation of meaningful change are increasingly important.

If we keep organizational patterns in proper perspective, we can build educational innovations around essential problems and perplexing questions which surround the teaching-learning act, instead of becoming addicted to simple solutions and monolithic answers. Team teaching, for example, might be used as one of several plans or as an aspect of some combination of several plans rather than as an end in itself. This is equally true of all of our new efforts to individualize instruction.

For example, one of the possible benefits of the team organization is that it facilitates the working of groups of teachers to improve the quality of instruction. The word "possible" is used because there is no built-in guarantee that simply putting groups together to work will bring about the desired results. Indeed, it may often be true that we are merely compounding a felony--that we are better organizing our weakest educational patterns and with cooperative efforts, inflicting them on greater numbers of pupils. One could hardly consider this an advantage regardless of the "billing on the marquee." Unless teachers and administrators involved in innovative efforts bring to them insight and direction, they will take neither away. The question which must be asked constantly is "change for what and in what direction?" Without carefully defined target directions, innovation may lead to nothing more than a compounded sense of "educational lostness."

AVENUES TOWARD CHANGE

Curriculum improvement necessarily entails the re-organization of pupil experiences and the re-organization of the academic program. As society changes, the curriculum must change. This means that courses must constantly be added and subtracted or combined. The adding of courses must be more judiciously applied than in the past. The simple listing of a sophisticated-sounding course in order to maintain status is a false attempt at curriculum improvement.

Modification of curriculum is a target of most groups concerned with curriculum improvement. Many national projects have helped immeasurably in bringing the curriculum up-to-date. Updating content is a continuous process. Curriculum workers must constantly be reminded that today's education has to be of value to tomorrow's citizens.

Another approach to improving the curriculum is through the development of carefully conceived organizational patterns. Such patterns usually result in a change in roles and in the decision-making procedures; thus, the patterns so developed may provide opportunity for feedback from students, teachers, and the community.

THE PONTOON TRANSITIONAL DESIGN

Among such organizational patterns are Pontoon Transitional Designs. A pontoon may be considered a higher form of team teaching. Team teaching requires large group presentations, small discussion groups, and individual study. The pontoon concept incorporates all of these plus the inter-relationship of various disciplines in a flexible block of time. In many cases, various subjects can be collated readily and thus help in bringing about better understanding of both subjects. Eventually, in some areas we are working toward "total" learning.

The pontoon concept is identified as inter-relating two or more subjects under the leadership of teachers from different disciplines in a block of time in which each would ordinarily operate independently. There are three types of pontoons: (1) Compatible correlation [example--English, history, and art] (2) Periodic correlation [example--algebra II and chemistry] (3) Non-correlated. Even though some subjects do not readily correlate, a pontoon arrangement can still be advantageous due to flexibility of time and the potential of varying the size of learning groups.

Some examples of pontoons include: English, history, and art; algebra II and chemistry; civics and physical education; band and physical education; biology and physical education; geography, world history, and English; business English and typing and/or shorthand. A pontoon can incorporate two to six disciplines in a block of time.

Among the advantages of pontoons are: (1) facilitates teachers' working together to solve common problems; (2) correlates subject matter; (3) allows teachers to adjust the time to fit the task at hand; (4) permits teachers to change the size of the group to fit the activity; (5) encourages teachers to vary instructional techniques; (6) avoids problems encountered when three teachers of the same discipline work together as contrasted with three teachers of differing disciplines; (7) makes possible the reduction of teacher talk; (8) enables students to better correlate subject matter; (9) allows for field trips without interfering with other teachers' classes.

Teachers seeking to implement pontoon designs must consider the three basic instructional components advocated by J. Lloyd Trump more than a decade ago: independent study, small group discussion, and assembly group presentations.

There is no room in a good instructional program for the traditional class of from 25 to 35 students. It is probably the least useful and least effective size pattern for learning. Twenty-five to 30 students are too many for a good discussion or a manageable laboratory and too few for a large group presentation. Traditional class size groups must be replaced by more realistic learning groups. The size of teaching-learning groups should be determined by the goals which teachers and pupils have identified.

The pontoon designs which follow are envisioned as means toward ends, as bridges toward individualized education, the instructional goal of the Model Schools Project. They can aid teachers in developing flexible schedules which enable them to make decisions relating to such variables as size of learning groups, frequency of learning activities, and duration of learning activities. The pontoon designs are not in and of themselves flexible schedules; they are only what teachers make them. The following designs which have been field tested in numerous school districts enable small groups of faculty or total faculties whose readiness has been developed, to move in new directions.

Our conviction is that there are no monolithic approaches or solutions to the problems which plague the teaching learning act. If one looks for a singular, simple solution, one fails to take into consideration the fantastic human variables which must be dealt with in the process of teaching and learning.

The monolithic approach of a "neanderthal" age is hardly appropriate in a society which is as intermixed as the contemporary world. Many different approaches will be found to be effective with varying kinds of populations in achieving the ultimate target of individualized instruction --educational programs designed with specific persons in mind.

The concern of the writers in implementing the Model Schools Project is to assist schools in taking the initial steps. We believe that such skeletal frames of reference as the pontoon design, combined with some element of continuous progress, can be a major asset in moving toward truly individualized instructional programs.

PONTOONS SCHEDULE EXPLANATION

The formula used in organizing pontoon teams is three times class size plus ten with a three-subject pontoon or two times class size plus ten with a four-subject pontoon. For example, if class size in a school is typically 28, the formula then would be three times 28 plus ten or 94 pupils. This would be described as a 94-3-1 design; ninety-four pupils, three teachers--one in each of three subject areas --and an aide. If class size is 30, the formula then would be three times 30 plus ten, or 100-3-1. If class size were 30 and one were creating a two-period pontoon, the formula would be two times 30 plus ten, or 70-2-1; 70 pupils, two teachers--one in each of two subject fields--and an aide.

The pontoons are given responsibility for the organization of the time which is blocked in two periods, three periods, or four periods. Many schools initiate change with one such pontoon. Over a period of years, such a design can be expanded so that gradually the staff is able to redefine its role. For example, one high school started with one pontoon of 90 pupils, three teachers and one aide. Five years later, 80 percent of the student body of 1400 were involved in such pontoon designs. In this way, change can be implemented on a graduated basis rather than an all or nothing approach. With limited budget, this makes possible the gradual involvement of more and more staff. Of course, if funding is available, larger numbers of staff can be assisted in implementing change in a shorter period of time.

ILLUSTRATIVE SCHEDULE
THREE PERIOD PONTOON
BIOLOGY, ENGLISH, GEOMETRY

TWO DAY LAB SCHEDULE FOR BIOLOGY

	11:55-12:00	12:05 - 1:20		1:25 - 2:35	
BIOLOGY	Large Group	AB		CD	
ENGLISH	Roll Call Only	12:05-12:40 CD	12:45-1:20 EF	1:25-1:55 AB	2:00-2:35 GH
GEOMETRY		EF	CD	GH	AB
DIRECTED STUDY		GH		EF	

SCHEDULE 1

	11:55-12:00	12:05 - 1:20		1:25 - 2:35	
BIOLOGY	Large Group	EF		GH	
ENGLISH	Roll Call Only	12:05-12:40 GH	12:45-1:20 CD	1:25-1:55 EF	2:00-2:35 AB
GEOMETRY		CD	GH	AB	EF
DIRECTED STUDY		AB		CD	

SCHEDULE 2

ILLUSTRATIVE SCHEDULE
THREE PERIOD PONTOON
ENGLISH, ALGEBRA, GEOGRAPHY

	11:55 12:00	12:00 12:25	12:30 12:50	12:55 1:15	1:20 1:40	1:45 2:10	2:15 2:35
ALGEBRA	PREP	X	AB		EF		CD
ENGLISH			CD	X	AB		EF
GEOGRAPHY			EF		CD	X	AB

SCHEDULE 1

Each Student: 3 large groups
3 small groups
(20 minutes each)

	11:55 12:05	12:10 12:30	12:35 12:55	1:00 1:20	1:25 1:45	1:50 2:10	2:15 2:35
ALBEGRA	P	A	F	E	D	C	B
ENGLISH	R	B	A	F	E	D	C
GEOGRAPHY	E	C	B	A	F	E	D
DIRECTED STUDY	P	DEF	CDE	BCD	ABC	FAB	EFA

SCHEDULE 2

Each Student: 3 mini-groups
1 hour Directed Study

	11:55 12:00	12:05 12:40	12:45 1:20	1:25 2:00	2:05 2:35
ALGEBRA	P	CD	AB	EF	
ENGLISH	R	AB	EF		CD
GEOGRAPHY	E	EF		CD	AB
DIRECTED STUDY	P		CD	AB	EF

SCHEDULE 3

Each Student: 3 small groups
1½ hour Directed Study

	11:55 12:05	12:05 12:35	12:40 1:15	1:20 1:55	2:00 2:35
ALGEBRA	P	X			
	R		AB	EF	CD
	E		CD	AB	EF
	P		EF	CD	AB

SCHEDULE 4

Each Student: 1 Algebra
Large Group
Small Group
English
and
Geography
35 minute
Directed
Study

Selected Bibliography

This bibliography is divided into general references and items with more emphasis on research. No attempt is made to be all-inclusive. Many of the items suggest sources for additional reading. The Education Index, available in education libraries, constitutes a source for locating other published articles under such categories as "Independent Study." Most research oriented articles are available only in periodicals or in dissertation form through University Microfilms, Inc., Ann Arbor, Michigan.

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THE PONTOON TRANSITIONAL DESIGN FOR CURRICULUM CHANGE

By William Georgiades

INTRODUCTION

In a rapidly changing world which requires citizens with skills and competencies different from those needed in the past, it is clear that school programs must be relevant to today's demands, necessitating continuous teacher inservice and curriculum modification.

Educational engineering requires time and persistence. Master planning cannot be purchased, but rather must evolve as the district identifies targets and means of attaining desired ends. Furthermore, a master plan must be developed in the spirit of working with people rather than of working for people. The best master plan is useless unless it results in an improvement in the classroom. Little improvement is likely to occur until teachers' and administrators' concerns are openly explored. The climate of a school contributes greatly to the free expression of teachers' and administrators' concerns. Emotionalism, bigotry, and authoritarianism can block curriculum improvement. On the other hand, constructive attitudes of educational leaders will stimulate progress toward desired goals.

Curriculum improvement necessarily entails the reorganization of pupil experiences and the reorganization of the academic program. As society changes, the curriculum must change. This means that courses must constantly be added, subtracted, or combined. The adding of courses must be more judiciously applied than in the past. The simple listing of a sophisticated sounding course in order to maintain status is a false attempt at curriculum improvement.

Modification of curriculum is a target of most groups concerned with curriculum improvement. Many national projects have helped immeasurably in bringing the curriculum up-to-date. Updating content is a continuous process. Curriculum workers must constantly be reminded that today's education has to be of value to tomorrow's citizens.

Another approach to improving the curriculum is through the development of carefully conceived organizational patterns. Such patterns usually result in a change in decision-making procedures; thus, the patterns so developed must provide opportunity for feedback from students, teachers, and the community.

PONTOON-TRANSITIONAL DESIGN

One such organizational pattern is the pontoon-transitional design. A pontoon may be considered a higher form of team teaching. Team teaching requires large group presentations, small discussion groups, and individual study. The pontoon concept incorporates all of these plus the inter-relationship of various disciplines in a flexible block of time. In many cases, various subjects can be correlated readily and thus help in bringing about better understanding of both subjects. Eventually, in some areas we are working toward "total" learning.

The pontoon concept is identified as interrelating two or more subjects under the leadership of teachers from different disciplines in a block of time in which each would ordinarily operate independently. There are three types of pontoons:

1. Compatible correlation (Example: English, History and Art)
2. Periodic correlation (Example: Algebra II and Chemistry)
3. Non-correlated

Even though some subjects do not readily correlate, a pontoon arrangement can still be advantageous due to flexibility of time and the size of learning groups allowed in the block.

Some examples of pontoons in the various disciplines include: English, History and Art; Algebra II and Chemistry; Civics and Physical Education; Band and Physical Education; Biology and Physical Education; Geography and World History; Business English and Typing and/or Shorthand; etc. A pontoon can incorporate from two to six disciplines in a similar block of time.

Some advantages of pontoons are:

1. Facilitates teachers working together to solve common problems;
2. Correlates subject matter;
3. Allows teachers to adjust the time to fit the task at hand;
4. Permits teachers to change the size of the group to fit the activity;
5. Encourages teachers to vary instructional techniques;
6. Where two teachers in the same disciplines may be reluctant to work together, separate disciplines may not suggest such pressures;
7. One lecture a week instead of several every day;
8. Allows students to correlate subject matter;
9. Field trips can be readily undertaken without interferring with other teachers, classes, etc.
10. If for some reason the pontoon is not workable, teachers and students can revert to the traditional setting without complications.

Teacher feelings of insecurity were a frequent problem with early multi-subject approaches. Scheduling blocks of time involving two disciplines does not necessarily mean a general regression of the scholarship in each area. Furthermore, if an English and biology team is conceived, it does not mean that the English teacher need to know biology. The establishment of a pontoon does mean that teachers must be willing to work together to solve common problems for the mutual advantage of all.

Whenever possible, subject matter should be correlated. Correlating subject matter is a method of reinforcement. The English teacher who assigns a theme about a topic in biology or social studies is helping students to relate one area to another. Fragmented curriculum is a common criticism of our schools. Too frequently, a student sees no use or value in a course. Seeing biology in relation to world history and English will help the student integrate the subjects in a more meaningful and lasting way.

Teachers implementing a pontoon design should consider three basic patterns--independent study, small group discussion, and large group presentations (see Figures 1 and 2). Research is building which indicates that the transitional class of from 25 to 35 students is probably the least useful and least effective pattern of organization. Twenty-five to thirty students are too many for a good discussion or a manageable laboratory and too few for a lecture demonstration. Traditional class size groups should be replaced by more realistic patterns.

LARGE GROUPS

All lectures should be delivered to the entire group. A successful pattern is to form small discussion groups after the lecture. The lectures should be obviously well planned and with some imagination. The sequence should be clear and easy to follow. An introduction should contain the purposes of the presentation and be planned in an interesting manner to capture the attention of the group. Objectives of the lesson should be clearly and thoroughly developed. And, all lectures should end with a strong closing statement.

DISCUSSION GROUPS

Most discussions should be well planned to ensure they are genuine learning experiences. Too frequently teachers feel their obligations to a class are terminated upon formation of discussion groups. Discussion questions should be skillfully prepared, thought provoking, and interesting. A sound technical device is to employ responses to move the discussion forward. It must always be remembered that the poorer students are at developing and discussing a topic, the more they need practice in this form of oral communication.

INDEPENDENT STUDY

Much evidence exists which indicates students learn just as much working independently as by more traditionally structured methods. Well thought out, behaviorally stated objectives can be effectively pursued by students. For

FIGURE 1

LARGE-GROUP SCHEDULES[1]

minutes	5 5	5 5
Subject I	ABC	
Subject II		ABC

minutes	5 5	5 5
Subject I	ABC	ABC
Subject II		

minutes	5 5	5 5
Subject I		
Subject II	ABC	ABC

SMALL-GROUP SCHEDULES[1]

minutes	30	40	40
Subject I	ABC	A	A
Subject II		B	C
Independent Study		C	B

minutes	40	40	30
Subject I	B	B	A
Subject II	C	A	C
Independent Study	A	C	B

minutes	40	40	30
Subject I	C	C	B
Subject II	B	A	A
Independent Study	A	B	C

minutes	36	36	36
Subject I	C		ABC
Subject II	B	ABC	
Independent Study	A		

SMALL-GROUP SCHEDULES[1]

minutes	36	36	36
Subject I	AB	C^2	C^1
Subject II	C^1	AB	C^2
Directed Study	C^2	C^1	AB

minutes	36	36	36
Subject I	BC	A^2	A^1
Subject II	A^1	BC	A^2
Directed Study	A^2	A^1	BC

minutes	36	36	36
Subject I	AC	B^2	B^1
Subject II	B^1	AC	B^2
Directed Study	B^2	B^1	AC

KEY:

A = 15 students
B = 15 students
C = 15 students

A^1 = 7-8 students
A^2 = 7-8 students
B^1 = 7-8 students
B^2 = 7-8 students
C^1 = 7-8 students
C^2 = 7-8 students

SAMPLE PONTOON DESIGN

45 students, 2 teachers, 1 teacher assistant

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[1] Hundreds of designs are possible. These are only a few examples.

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FIGURE 2

LARGE-GROUP SCHEDULES[1]

minutes	55	55	55
Subject I	ABC		
Subject II		ABC	
Subject III			ABC

165		
A	B	C

3 day cycle

GROUPS

A = 30 students
B = 30 students
C = 30 students

A^1 = 15 students
A^2 = 15 students
B^1 = 15 students
B^2 = 15 students
C^1 = 15 students
C^2 = 15 students

a^1 = 7-8 students
a^2 = 7-8 students
a^3 = 7-8 students
a^4 = 7-8 students
b^1 = 7-8 students
b^2 = 7-8 students
b^3 = 7-8 students
b^4 = 7-8 students
c^1 = 7-8 students
c^2 = 7-8 students
c^3 = 7-8 students
c^4 = 7-8 students

minutes	110	27	27
Subject I	ABC		
Subject II		ABC	
Subject III			ABC

3 day cycle

minutes	27	27	27	27	27	27
Subject I	B^1	B^2	C^1	C^2	A^1	A2
Subject II	C^1	C^2	A^1	A^2	B^1	B^2
Subject III	A^1	A^2	B^1	B^2	C^1	C^2
Independent Study	A^2B^2 C^2	A^1B^1 C^1	A^2B^2 C^2	A^1B^1 C^1	A^2B^2 C^2	A^1B^1 C^1

SMALL-GROUP AND INDEPENDENT STUDY DESIGNS[1]

minutes	41	41	41	41
Subject I	a^1	a^2	a^3	a^4
Subject II	b^1	b^2	b^3	b^4
Subject III	c^1	c^2	c^3	c^4
Directed Study	a^2a^3 a^4b^2 b^3b^4 c^2c^3 c^4	a^1a^3 a^4b^1 b^3b^4 c^1c^3 c^4	a^1a^2 a^4b^1 b^2b^4 c^1c^2 c^4	a^1a^2 a^3b^1 b^2b^3 c^1c^2 c^3

4 day cycle

SAMPLE PONTOON DESIGN

90 students,
3 teachers,
2 assistants

---

[1] Hundreds of designs are possible. These represent only a few examples.

example, a student can learn by himself to locate all of the countries in South America by labeling an outline map. Obviously, students must be given a series of very specific objectives for this type of independent study. In most cases students working independently should be free to work quietly by themselves, form discussion groups, visit the library or confer with the teacher as the need arises.

TEACHER ROLES

Teachers participating in pontoons can help each other strengthen their instructional skills. Self-evaluation should be augmented by suggestions from students and other pontoon teachers. Critiques can include anything from preparation to personality.

Several dimensions of excellence should be considered by pontoon teachers. Actually, it is quite easy to organize a different kind of instructional unit. However, the organization should contribute to the pursuit of excellence. The first dimension of excellence is simple mastery of information. The student should ask why; he should desire to know. Careful attention must be given to the development of an inquiring mind. Concomitantly, the student should experience satisfaction in his growing awareness of academic problems.

A second dimension of excellence is the ability to identify and formulate appropriate solutions in problem-solving situations. The teachers in the pontoon need to develop the habit of organizing classwork along the lines outlined by the scientific method. Each lesson to be taught is a problem. The teacher and the students must identify what needs to be done. The objectives should be clearly outlined and developed. Objectives may be stated in the format of hypotheses. In this case, arguments for or against the hypotheses must be collected. In all cases conclusions, recommendations, and implications should be carefully formulated.

Third, excellence in education is marked by the presence of thoroughly developed communication skills. Student should be encouraged to actively communicate the business of the day. Students need to write, read, discuss and present material as much as possible. The teacher should try to avoid making a presentation or answering a question that a student might be capable of presenting or answering.

Successful pontoons formulate and develop cognitive and affective objectives. The pontoon-transitional pattern is more flexible than the traditional class. Pontooning permits teachers to creatively explore many patterns of grouping designed to compliment the educational task. The basic components of the pontoon design are independent study, small-group discussion, and large-group presentation.

Dimensions of excellence other than simple cognition should be given consideration by teachers in the pontoon.

The Commission on Educational Policy's Dimensions of Excellence in Education suggests the following as indicators of excellence:

1. Capacity for inquiry
2. Problem-solving competence
3. Communication and computational skills
4. Familiarity with organized disciplines
5. Cultivated enjoyable
6. Democratic commitment

SUMMARY

Rapid changes in methods and organization of schools compel districts to establish a continuing in-service training program in order that teachers can stay abreast of the times. Cultural and technological pressures are representative of those influences that have produced a need for a deeper commitment to the desirability and necessity of exploring new methods of instruction and new patterns of organization.

A policy and budget should be established for providing teachers and administrators the opportunity to visit innovative schools. Appropriate substitutes should be furnished, and teachers' expenses should be paid out of district funds.

Faculty meetings, in which an active dialogue is created and maintained relative to the teaching and learning act, should be a major target of in-service training. The business of the day should be dispensed with quickly and efficiently. Guest speakers such as sociologists, supervisors, personnel from innovative schools, educators, consultants, lay personnel, county school personnel, subject matter experts, psychologists, salesmen of new equipment, etc., should be used whenever possible. Maximum teacher participation, wherein faculty committees address themselves to problems of the school, are highly desirable.

No attempts to organize a pontoon-transitional program should take place without in-depth involvement of administrators and teachers. At the appropriate time, pupils and community will also be involved. Unless the new roles which educational change demands are internalized, we have built on foundations of sand.

PRACTICAL CONSIDERATIONS FOR IMPLEMENTING THE PONTOON TRANSITIONAL DESIGN

By John J. Gyves

INTRODUCTION

> Teaching and the imparting of knowledge make sense in an unchanging environment. This is why it has been an unquestioned function for centuries. But if there is one truth about modern man, it is that he lives in an environment which is continually changing. . . . The only man who is educated is the man who has learned how to adapt and change, the man who has realized that no knowledge is secure and that only the process of seeking knowledge gives a basis for security. . .
>
> Carl Rogers

If we, as educators, can accept the unalterable fact that we exist in an age when the only constant is change itself, then we must also accept the awesome implication that education must endeavor to equip its clients to accommodate this perpetual novelty. Man's survival will surely depend upon his ability to cope with his environment, with his fellowman, and with himself, yet our schools, in many ways, continue to emphasizing the obsolete.

To produce students who are receptive to inevitable change, who are not anachronisms in their own time, education must first be willing to change itself. We who have been so slow to accept change must now foster it. We must do so by deemphasizing the traditional emphasis on cognitive achievement, since so much of the cognitive is instantaneously obsolete, and by dedicating ourselves to the preparation of the individual for existence and subsistence in a perpetually changing world. Achievement of such goals is only possible through significant new approaches that aim at guaranteeing each youngster a truly individualized learning situation.

Though we have known for some time that there is no one class size or length of teaching period that is best for all teaching situations, most schools have continued the practice of placing 30-35 students with a teacher for 40-60 minutes every day. Lately, however, there seems to be a ground swell of newer scheduling methods aimed at improving the teaching-learning situation and making it more individualized. Among these are rotating schedules that allow extended periods of time in certain classes on certain days, modular scheduling programs and programs of large-group small-group instruction that incorporate significant amounts of independent study time. Many of the newer approaches use team teaching as their hub.

THE PONTOON TRANSITIONAL DESIGN

Obviously, there is no one "best" way to achieve educational change, but perhaps the most promising of the new methods is "The Pontoon Transitional Design for Curriculum Change" initiated by Dr. William Georgiades of the University of Southern California. The Pontoon Transitional Design has been offered by Dr. Georgiades as a vehicle for making the transition from mass education to individualized instruction. It facilitates team teaching, differentiated staffing, flexible scheduling and the correlation of subject matter; it also provides for assembly groups, discussion groups and individual study.

Dr. Georgiades, in a publication entitled "The Pontoon Transitional Design for Curriculum Change," described the pontoon as follows:

> A pontoon may be considered a higher form of team teaching. Team teaching requires large group presentations, small discussion groups and individual study. The pontoon concept incorporates all of these plus the inter-relationship of various disciplines in a flexible block of time. In many cases, various subjects can be correlated readily and thus help in bringing about a better understanding of both subjects.

He further elaborates by saying:

> The pontoon concept is identified as interrelating two or more subjects under the leadership of teachers from different disciplines in a block of time in which each would ordinarily operate independently.

Succinctly, the advantages claimed for the Pontoon Transitional Design are as follows:

A. Some Advantages of Pontoon Scheduling for Students:

1. Students may be sub-grouped in small numbers according to ability, need or specialized interest.
2. More interaction occurs between student and teacher in small groups than in large groups.
3. The length of a lesson may vary depending on interest of the topic.
4. Allows for pre- and post-discussion of films, topics, speaker, etc., in large or small groups.
5. Allows for large group lecture and small group discussion.
6. Many field trips can be taken within the block of time without disrupting other classes.
7. More freedom to work on research in ways which encourage real learning--individually or in pairs, in the library or elsewhere.
8. Reduces student boredom because students no longer are required to sit in a classroom for 50 minutes each and every period.
9. Better attendance patterns and fewer drop-outs often result. (Research has shown improvement

in attendance, fewer drop-outs and an increase in IQ in many cases.)

10. Students tend to have fewer failing grades due to the increased "visibility" of the student and the more effective teacher-student contacts fostered by the pontoon design.

B. Some Advantages of Pontoon Scheduling for Teachers:

1. Allows for more strength through team effort.
    a. Problems and pitfalls are given consideration by several people rather than just by one teacher.
    b. Encourages a broad approach to learning.
    c. Involves the staff in decision making.
2. Provides opportunity for teachers and assistants to plan together so that there can be more effective teaching.
3. Allows opportunity to inter-relate subject areas. (A paper in history might serve as an essay for English.)
4. Requires professional communication between teachers.
5. Professional growth is fostered through exchange of ideas.
6. Places a greater responsibility on the teacher for planned instruction on a long-term basis.
7. Provides inservice training for new teachers as they work with experienced teachers.
8. Substitutes are not necessary when a member of a team is absent. This can result in a financial saving to the district, or the money can be used for other instructional activities.

The pontoon design offers additional, noteworthy advantages over other types of innovative programs, particularly those which feature computerized modular schedules. Computer-generated "flexible" schedules, unless they are of a "daily demand" nature, do not offer genuine flexibility and, in either case, require the irrevocable involvement of an entire school once the program is adopted. Few faculties are totally dedicated to any innovation at its inception, and this factor, coupled with a widespread tendency of the majority of students to misuse "independent" study time, has led to the demise of many promising programs. Conversely, pontooning can be initiated in stages, since it is compatible with a traditional schedule. Pontooning does not necessitate "burning the bridges behind" and is instantly reversible to the traditional departmentalized format in the unlikely event that the pontoon design does not prosper. Pontooning is easily organized to place any or every student under some form of adult supervision at all times, and pontooning is totally, even spontaneously, flexible. In short, the pontoon design seems to offer all the advantages of so-called flexible schedules, with significantly fewer problems.

Clifton Middle School of the Monrovia Unified School

District has adopted the Pontoon Transitional Design as its vehicle in a five year plan intended to achieve non-graded, individualized instruction for its students. Typically, the pontoon design is viewed as a "bridge" from traditional to individualized instruction, although increasing experience with the design indicates that the pontoon may utlimately survive as the scheduling "form" within which non-gradedness takes place. In any case, research studies on pontooning conducted in Southern California over the last several years by Frank Abbott at La Canada, Wesley Anderson at Arvin, Donald Clark at Monrovia and Howard Roop at Bellflower have verified the potential of the design since they have shown increases in IQ scores, cognitive achievements and attitudes of students taught under this approach.

Outlined in the pages that follow is the stage by stage development of the Pontoon Transitional Design at Clifton Middle School. Adapted to the unique variables that exist for any school or district that might wish to utilize the design, the Clifton approach, together with the accompanying notations and recommendations, might well serve as a model.

GENERAL CRITERIA AND SUGGESTIONS FOR SUCCESSFUL PONTOONING

In a publication entitled "Preparation of the Professional Staff for Utilizing the Pontoon Transitional Design," Dr. Donald Clark and Sally Clark list the following criteria for successful pontooning:

1. Support from Board of Education
2. Support from Central Office Administration
3. Support from School Administration (principal and assistant principal)
4. Interested Teachers (volunteers for pilot pontoons)
5. In-Service Programs and Consultant Support
6. Auxiliary Support (paraprofessional teacher aides)

It might be added that it is desirable for the school and the district to have a carefully developed long-range plan. True change occurs slowly and not without some trauma. Adequate planning with tangible, measurable objectives allows curriculum change to evolve in a gradual, systematic manner with the chances of sudden crises minimized, and also permits accurate evaluation of the innovation in light of the objectives established for it.

In the same vein, those responsible for initiating and sustaining a pontooning innovation can add greatly to the chances for a successful experience by doing some thoughtful research and reading. Minimal preparation might include a study of the publications listed in the bibliography of this paper, particularly those available from the Center for Excellence in Education at the University of Southern California.

It is also pertinent to note that the criteria for successful pontooning listed above will nearly always be comprised by conditions peculiar to the school or district that is considering the pontoon design. But the innovator can not afford the luxury of waiting until all the humors are right; he must be ready to act when a reasonable number of "go" signals are evident. One can always find reasons not to change, since no significant change is ever undertaken without problems and criticisms from those who favor the status quo. Hopefully, educators with foresight will recognize the need to innovate despite the obstacles.

DEVELOPMENT OF THE PONTOON TEAM

Once a school decides to incorporate any innovation into its program, a number of questions arise which demand immediate answers. Following are the questions which arose when Clifton elected to adopt pontooning, the course of action taken in each case, and the rationale for that action.

1. Should pontooning be instituted wholesale or should a more limited approach be used?

It was quickly decided that pontooning should be adopted on a pilot basis; many innovations have experienced an early demise because of overly optimistic beginnings. Any innovation, pontooning included, will have proponents who are anxious to attempt the new method and opponents who are quite willing to bury it without trial. Teachers who have taught a certain way with reasonable success for many years can't be expected to embrace innovation with elation. Consequently, it seemed far better to launch a pilot pontoon staffed with a team of capable teacher volunteers who were interested in the new venture. No real effort was made to convince the remainder of the faculty that pontooning was "the only way," the feeling being that the pontooning design would sell itself if it was indeed an improvement on the older method.

2. What subjects should be pontooned?

Virtually any combination of subjects may be pontooned with some benefits; if the disciplines themselves do not correlate very well, the teachers will still retain the advantages of being able to manipulate time and numbers of students. At Clifton, however, it was decided that our initial pontoon should be an intra-disciplinary team incorporating English, mathematics and social science at the seventh grade level. This combination was selected since those subjects were required at each grade level at Clifton, were given on a five-period a week basis, and offered possibilities for desired integration of subject matter. In the subsequent evolution of Clifton's pontoon program, this combination of subjects has persisted and is commonly referred to as a "core pontoon" format.

3. How should teachers be selected for the initial pontoon?

Any method of selecting personnel for the pilot pontoon could be fallible, but beginning with a team of volunteers is the procedure that has enjoyed the most success. Ideally, the list of teachers interested in working innovatively will contain the name of a proven, experienced professional who can be the "bellweather" of the new team. This individual should be an outstanding teacher and command the respect of his colleagues because of his involvement with his profession above and beyond the expected. Beyond this necessary ingredient, there is no rule of thumb except to say that the remainder of the team should exhibit enthusiasm in their teaching, interest in trying out new ideas, and an abiding open-mindedness. It does not seem to be vital that the balance of the team be veteran teachers or newcomers, as long as these characteristics are evident.

It might be noted that at no time has the Clifton administration appointed the pontoon team leader, preferring to let leadership evolve. Generally this has prompted freer exchange of ideas within the pontoon.

4. How should students be selected for the pontoon team?

While there might be some merit in surveying to determine which parents want their youngsters involved in the initial pontooning efforts, experience tells us that the pontoon design, or any innovation, is best introduced as unobtrusively as possible. Later, when the design is firmly established, the philosophy and rationale for pontooning can be more widely promulgated.

Clifton chose to schedule students into the teams heterogeneously, since the pontoon design gives the teacher the added capability of working with students of lower or higher abilities within the pontoon framework. However, there is some precedent and rationale for grouping students by ability within a particular pontoon.

5. What should be the commitments of the administration to the pilot pontoon program?

Teachers who elect to be involved in the pilot pontoon will be subject to pressures from all quarters. The pressure of sailing uncharted waters would be enough, but the fledgling team will be subject to the critical eyes of many people, some merely waiting to see if the new method is an improvement on the old, some undoubtedly hoping that the innovation fails so that the status quo will be vindicated. Parents, too, will follow the experiment closely to form opinions on its worth.

In the face of such pressures, and in view of the daily successes and failures that the pilot team will experience, it behooves the supervising administrator to be supportive of the venture and to provide encouragement for the participants. The administrator must also play the devil's advocate, but he may do so with the acceptance of the team as long as they are convinced that he has confidence in the ultimate success of their venture.

It goes without saying that the administrator is responsible for the "chemistry" of the pontoon team and must exercise his prerogative to add or remove teachers as circumstances may warrant.

6. How often and when should the pontoon team meet?

The pontoon design provides the teaching team with the ability to generate planning time for its members; however, it is vital that the team meet as a unit to plan jointly and to discuss individual student problems. Ideally, common preparation periods can be assigned to team members so that daily meetings might be held, and much exchange has occurred at Clifton due to the efforts to establish a common lunch period for team members.

Team meetings provide a setting in which details of subsequent days' schedules are worked out. At first, it may be necessary for the pontoon team to meet almost daily until they become adept in the mechanics of pontoon scheduling. Having the latitude to schedule time and students in accordance with the instructional objective is one thing; doing it effectively is another. Administrators and other observers might well be advised not to expect "too much, too soon."

7. When should new pontoon teams be added?

If solid groundwork is done prior to the formation of the initial pontoon team, the new teaching team is virtually programmed for success. The pontoon design provides avenues for improving on old methods, and only needs creative people to effectively utilize those avenues. It has been dramatically proven at Clifton that if other staff members are given an opportunity to observe the pontoon teacher in action; to participate in workshops on the transitional design; and to plan, work and informally exchange ideas with the pontoon teams; then staff interest and involvement increase accordingly. It is up to the administration to provide situations where these exchanges can take place. Given these opportunities, most teachers will eventually see the advantages of working closely with a teaching team of professionals augmented by an instructional aide, and begin to compare their own regimented classroom routines to those of the pontoon team. It should become obvious to them that they are denying themselves the opportunity to continaully exchange relevant information on student progress with other teachers who are working with the same group of youngsters. Nor is the paraprofessional assistance to be overlooked as an incentive factor either. A successful product is its own best advertisement. The Pontoon Transitional Design can now be validly called a successful product and, as such, will sell itself to teachers who are given opportunities to observe it in effective operation.

8. How are instructional aides provided for the pontoon team?

Educators agree that teachers can be more effective if they are released from non-teaching responsibilities so that they have more time for adequate preparation, for individualized instruction, for evaluation and for consultation. While several types of differentiated staffing programs have been proposed with a view towards achieving these ends, Clifton has elected to adopt a format which calls for differentiation only at the paraprofessional level, rather than at the professional level. Such an arrangement calls for auxiliary personnel to be placed in the distinct categories of instructional aides, clerical aides and general aides.

A number of school districts finance paid paraprofessional assistance above and beyond a particular school's allotment of certificated staff. Other districts give the school principal the option of hiring certificated personnel or paraprofessional assistance within the constraints of the school's budgeted teacher allotment and California laws governing professional-paraprofessional ratios. Clifton comes under the latter category, and the Monrovia Unified School District has established an average teacher salary which can be used by a principal to purchase paraprofessional time if he chooses to do so instead of hiring an additional teacher. In Monrovia, this formula enables a principal to acquire 21 hours of aide time per day for an entire school year in exchange for any one certificated position.

The publication entitled "The Selection, Training and Effective Utilization of Instructional Aides" by Dr. Donald C. Clark and Sally Clark, compiled under the auspices of The Center for Excellence in Education at the University of Southern California, offers an exceptional set of criteria for an effective paraprofessional program.

9. To what extent should in-service workshops and outside consultants be used in incorporating the pontoon design?

University consultants seem to be most widely utilized as the inspirational, prime-mover of an innovation. There is, of course, merit in this practice. Clifton, however, has been fortunate in having Dr. William Georgiades, the originator of the pontoon design, available as a continuing consultant. When problems arose with the pontoon program, we were always able to depend on Dr. Georgiades for a viewpoint based on a broader experience and perspective than those of us immersed in the problem were able to perceive. Also, maintaining a continuing contact with our consultant created another very tangible benefit. Through Dr. Georgiades, Clifton maintained a link with other districts involved in pontooning programs; the result was a very gratifying exchange of information and concerns within a virtual fraternity of educators working with the pontoon innovation.

In-service preparation of teachers who are going to work with the pontoon design is a most vital commodity. Clifton has been fortunate in that each teacher has been pretrained with his pontoon team before the start of the school year, and, with Dr. Georgiades, workshops have been organized annually to accommodate teachers new to pontooning and those with experience behind them. By so doing, Clifton has been able to progress each year in the ability of its teachers to effectively use the scheduling mechanics of the pontoon and in the orderly transition of its curriculum toward the goal of non-gradedness.

BUILDING THE MASTER SCHEDULE

Building a master schedule in a middle school or a junior high school, in comparison to the same task in a high school, is a relatively simple chore, since the number of variables is significantly reduced. Initial data for creating the schedule is provided by such factors as the projected enrollment for each grade level, number of sections to be offered based on student preregistration, district student-teacher loading ratios, teacher capabilities and facility availabilities. Piecing the jigsaw together is always a challenging undertaking, but there is a feeling of tangible accomplishment as a functional schedule emerges.

Single-period offerings and a multiplicity of electives are the characteristics that generate student class conflicts and scheduling problems. In Clifton's program each student has traditionally selected one elective; and in recent years it has been possible to schedule these at a set period during the day, outside the regular pontoon structure. Thus, conflicts with electives have been eliminated. All other courses within the pontoon structure, including core subjects, exploratory sequences and physical education, are required under Clifton's curriculum philosophy.

When, however, the Pontoon Transitional Design is combined with traditional, departmentalized classes in a school, it is vital that the pontoons be scheduled first. Conflicts are bound to occur when single-period offerings are added to this combination and scheduled within the period ranges occupied by pontoons which students may also be requesting. To ease this inevitable difficulty, it is wise to ask students to indicate a second and even a third choice of elective so that one may eventually be located outside the range of periods occupied by a student's pontooned classes.

FACILITIES FOR PONTOONING

While it can be said with justification that effective innovation can occur in any type of school plant, new or old, conventional or modular in concept, certain facility limitations do impose constraints on proper use of the pontoon design. Since the design is premised on the use of the triad of instructional settings including large-group, small-group and individual study, facilities must accommodate, or be adapted to accommodate, these types of instruction. Obviously, schools will encounter the most difficulty in locating large-group areas, but it is vital that facilities be available to accommodate 60-100 students, or more. With careful scheduling, one such facility can suffice, but the school with two or three such areas has enviable latitude available to it.

As small-group instruction and individual study become integral parts of the school program, room arrangements will be less standard and more flexible. With a little imagination, any school can provide suitable settings in which students can pursue these types of instruction. It might be noted here that one of the strengths of the pontoon design is that students are always under adult supervision, either teacher or aide, and are never left completely to their own devices; this is particularly important and appropriate for students of middle school age. It is our belief that students should never be turned loose under the assumption that they will do things, such as work and study, that most adults would not do under the same set of circumstances. Consequently, the aim should be to provide adequate facilities such as small group discussion rooms, resource centers, and media centers where pupils can pursue learning under adult guidance.

An often-overlooked aspect in facility planning is the allotment of adequate work areas for staff personnel. Teachers and aides need places where they can plan, conference and prepare materials, such areas generally seem to be added as an afterthought and are rarely well equipped to serve their functions. Tangible curriculum benefits will result when office spaces that offer some privacy are provided for teachers. Another important consideration is a lounge area where staff members may relax and socialize; just as many ideas are generated by informal contacts as are generated in planned meetings.

DEVELOPMENT OF THE PONTOON TRANSITIONAL DESIGN AT CLIFTON

YEAR #1 - 1968/69

During the spring and summer of 1968, special funds provided by California Senate Bill 28 provided the impetus for a small group of Monrovia teachers, under the guidance of Dr. William Georgiades, to take part in an extensive inservice program organized to include the following aspects of pontoon development:

1. Identification of teacher volunteers
2. Pontoon team formulation
3. Visitations to schools with operative programs
4. Schedule development
5. Writing of behavioral objectives
6. Proper utilization of aides
7. Evaluation of results

In September, the following teams began operation at Clifton:

Pontoon Type I (Core)

Composition: 100 students - 3 teachers - 1 aide
Number: Two - One (A.M.), One (P.M.)
Time: 3 period block (134 minutes)
Subjects: English, Mathematics, Social Science
Grade Levels: 7th

Pontoon Type II

Composition: 60 students - 2 teachers - 1 aide
Number: One (P.M.)
Time: 3 period block (134 minutes) P.M. only
Subject: English, Journalism, Social Science (Mentally Gifted Minor Program)
Grade Levels: 7th and 8th

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YEAR #2 - 1969/70

The interest and enthusiasm generated by the relative successes of the pontoon design in its first year of operation at Clifton was evidenced by the requests from teachers to participate in the development of new pontoon teams. Spring and summer workshops with Dr. Georgiades dealt with essentially the same components as in the prior year's in-service program, albeit with many refinements. The result in September was the expansion of the pontoon program to the point where sixty percent of all Clifton students were receiving core subject instruction in pontoons according to the following format:

Pontoon Type I (Core)	
Composition:	100 students - 3 teachers - 1 aide
Number:	6 - (3) A.M. (3) P.M.
Time:	3 period block (134 minutes)
Subjects:	English, Mathematics, Social Science
Grade Levels:	7th and 8th

YEAR #3 - 1970/71

During the winter of 1970, plans were made to transform Clifton into a sixth, seventh and eighth grade middle school. At that time a five year plan for a transitional curriculum was devised that would take Clifton from a primarily conventional schedule to totally individualized instruction. The plan, developed by Monrovia's Director of Research and Planning, Dr. Donald Clark, was entitled From Pontoon to Individualized Instruction: A Plan for Transition; it listed the following goals:

1. To develop a strategy that will lead to the complete individualization of instruction at Clifton Middle School by the fall of 1975.
2. To encorporate in the strategy the Pontoon Transitional Design as the vehicle for facilitating the transitional steps from rigid scheduling to individualized instruction.
3. To incorporate in the strategy the concept of continuous progress.
4. To redefine current administrator roles and implement the concept of differentiated staffing.
5. To redefine the teaching role and introduce the teacher-counselor concept.
6. To identify and utilize suitable instruments for evaluation of pupil cognitive achievement and to develop appropriate methods of measuring attitudes of pupils, teachers, administrators, parents and community.

With the continued success and progress of existing pontoons at Clifton, and with the above commitments in mind, a comprehensive forty-hour summer workshop was held for all incoming sixth grade teachers and for additional selected seventh and eighth grade faculty. Clifton Middle School opened in September, 1970, pontooned virtually in its entirety. Every student was receiving instruction in the core subjects in a pontoon, and was taking his other subjects, called "exploratory" subjects in Clifton's terminology, in newly formed pontoons.

While it was not financially possible to generate an instructional aide for each of the new exploratory pontoons, it was deemed advisable to pontoon these subjects in order to give the teaching teams experience in dealing with the mechanics of manipulating the variables of period length and numbers of students. This practice is not recommended on any permanent basis because the instructional aide is the factor which gives the pontoon team genuine flexibility. Clifton used this method as an expedient and was able to provide enough aide time to the exploratory pontoons to provide minimum service while anticipating that a full-time aide would be assigned to each pontoon the next year.

Clifton was virtually pontooned in total for 1970/71 with the exception of physical education, electives and some remedial clinics and gifted labs in reading and mathematics.

Pontoon Type I (Core)

Composition: 90-100 students - 3 teachers - 1 aide
Number: 6 - (3) A.M., (3) P.M.
Time: 3 period block (134 minutes)
Subjects: English, Mathematics, Social Science
Grade Levels: 7th and 8th

Pontoon Type II (Exploratory)

Composition: 130-140 students - 5 teachers - 1/2 aide
Number: Two - (1) A.M., (1) P.M.
Time: 3 period block including a Physical Education period
Subjects: Physical Science, Health/U.S. Sub-Cultures, Industrial Arts Experiences or Home Arts Experiences, General Art (one semester each)
Grade Levels: 7th

Pontoon Type III (Exploratory)

Composition: 130-140 students - 4 teachers - 1/2 aide
Number: 2 - (1) A.M., (1) P.M.
Time: 3 period block including a Physical Education period
Subjects: Life Science, Health/Human Interaction, Typing/Careers, General Music (one semester each)
Grade Levels: 8th

Pontoon Type IV (Core and Exploratory)

Composition: 120-130 students - 4 teachers - 2 aides (one aide federally funded)
Number: 2
Time: 6 period block not including Physical Education
Subjects: Reading, Spelling, Linguistics, Mathematics, Social Science, Art, Music
Grade Levels: 6th

YEAR #4 - 1971/72

For the 1971/72 school year Clifton will retain its posture of being pontooned almost in entirety--but with one rather significant change. All teachers who are instructing at the seventh and eighth grade levels will teach at *both* levels with a view toward the day when these two grades will be combined in a non-graded format. Heavy emphasis will be placed on the continuous progress curriculum materials to facilitate the transition, this being the most significant remaining requirement before non-gradedness can become a functioning reality at Clifton.

A notable step in making needed curriculum planning time available for teachers was accomplished when a new elective policy was adopted at Clifton. Traditionally a survey was conducted each year to determine which electives students wished to have offered. From the resultant list of classes each student was asked to select one, but it was obviously impossible to offer all the suggested courses or to guarantee students placement in their first-choice electives. Thus, many pupils were inevitably programmed into electives they didn't really want, creating obvious problems for students and teachers alike. In the future, instead of offering mandated "electives" during the middle of the day, these classes will be offered at the end of the day on a truly voluntary basis. It is felt that this time at the end of the day can be put to much better use for all Clifton students by utilizing it for genuine electives, for academic counseling of students who are having academic difficulty, for student detention, for club activities, and for purposes of continued development of sequenced curriculum materials by teachers. It is estimated that two days each week will be devoted to curriculum planning by the entire faculty, with the other activities occurring daily under the supervision of teachers, district resource personnel and instructional aides.

Prior to the start of the 1971/72 school year, summer workshops again were held for pontoon personnel, including instructional aides. Since all individuals at the workshop had either taught in a pontoon or had experienced prior workshop exposure to the nuances of the design, it was possible to broach new levels of sophistication within the pontoon design. Experience and research had isolated some problem areas that required attention.

While inservice training and subsequent experimentation have familiarized teachers with the mechanics of the Pontoon Transitional Design to the point where teachers are more effectively manipulating daily student scheduling to accommodate the triad of large group presentations, small group discussion and individualized study, research studies are making it apparent that teachers have not significantly altered their teaching methodologies to fit the nature of the group. As with all schools, no matter what form of innovation was being used, traditional teaching by lecture was the "modus operandi," no matter what the size or purpose of the group. While a framework compatible with more varied and desirable instructional techniques has been provided, teachers are continuing to teach in the manner in which they have been taught--and this is understandable. However, this pattern must be changed and the onus for doing so seems to lie with individual school districts.

As a consequence, efforts in this summer's workshop were directed toward identifying the methods and behaviors that teachers might best use in the various instructional settings: large group, small group and individualized study. Efforts have also been directed toward defining those aspects of teacher behavior in the affective domain which create a climate conducive to learning within a classroom, and, in a larger sense, within a school. It is felt that efforts in these directions have been successful, and that there are discernible routes that can be utilized in the search for that educational Valhalla where each student can pursue genuinely individualized instruction in an atmosphere of sincere interest and concern for his well-being.

A full-time instruction aide will be available for each pontoon team operative at Clifton during 1971/72, and the pontoons will be organized on the following formats:

*Pontoon Type I (Core)

Composition: 80-100 students - 3 teachers - 1 aide
Number: 9 - (5) A.M., (4) P.M.
Time: 3 period block (134 minutes)
Subjects: English, Mathematics, Social Science
Grade Levels: 6th, 7th, and 8th

*Assignment of students and aides to 6th grade core pontoons will differ due to scheduling logistics, use of personnel, etc.

**Pontoon Type II (Exploratory)

Composition: 90-100 students - 4 teachers - 1 aide
Number: 1 - A.M.
Subjects: Health, Ecology, Industrial Arts Experience or Home Arts Experiences (12 weeks each)
Grade Levels: 8th

**Pontoon Type III (Exploratory)

Composition: 90-100 students - 4 teachers - 1 aide
Number: 1 - A.M.
Subjects: Life Science, Arts/Crafts, Human Interaction (12 weeks each)
Grade Levels: 8th

**Pontoon Type IV (Exploratory)

Composition: 90-100 students - 4 teachers - 1 aide
Number: 1 - P.M.
Subjects: Physical Science, Industrial Arts Experience or Home Arts Experience, U.S. Sub-Cultures
Grade Levels: 7th

**Pontoon Type V (Exploratory)

Composition: 90-100 students - 3 teachers - 1 aide
Number: 1 - P.M.
Subjects: General Art, Health, Communications
Grade Levels: 7th

**Note that these pontoons are loaded and staffed as legitimate pontoon teams, however, blocks of time were not designated for them due to the number of exploratory sequences offered and the necessity for students to take physical education at some point during these time periods.

Pontoon Type VI (Exploratory)

Composition: 80-90 students - 3 teachers - 2 aides
Number: 1 - A.M.
Subjects: Art/Music, Physical Education, Science
Grade Levels: 6th

Pontoon Type VII (Exploratory)

Composition: 150-160 students - 4 teachers - 3 aides
Number: 1 - P.M.
Subjects: Art/Music, Physical Education, Science
Grade Levels: 6th

MASTER SCHEDULE – YEAR 1

	RM.	PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 4
Aguilera, J.	18	Conf.	Conf.	Math 8	Math 8
Avakian, G.	11	Conf.	Speed Rdg. 7-8	Reading Imp.7-8	Eng. 7
Ball, M.	32	Eng. 7	Conf.	Careers/Econ.	Careers/Econ.
Beardsley, E.	28				Beg. Band 7
Bell, A.	1	Conf.	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th		
Ronning, N.	2	Conf			
Zook, B.J.	3	Conf.			
Brown, W.		P.E. 8	P.E. 8	P.E. 8	P.E. 8
Brunier, C.	12	Conf.	Conf.	Eng. 7	Lunch
Clements, M.	26	Conf.	Eng. 8	Eng. 8	Eng. 8
Ross, M.	6	Conf.	Crt. Wrtg. 8	Minr. Cult. 8	Minr. Cult. 8
Coccaro, J.	13	Conf.	Pub. Spk. 7-8	Am. Procds. 7	Am. Procds. 7
Colburn, B.	5	Conf.	E.H.	E.H.	E.H.
Cubberly, L.	P1	Math 8	Math 8	Math 8	Math 8
Cullinane, E.	28	Conf.	Math 7	Math 7	Conf.
Davidson, L.	14	Conf.	Opp. Class 7-8	Opp. Class 7-8	Opp. Class 7-8
Elman, L.	15	Conf.	Typing 7	Typing 8	Typing 8
Greer, B.	25	Conf.	Soc. Sci. 8	Soc. Sci. 8	Soc. Sci. 8
Grubbs, R.	23	Drftg. 7	Drftg. 7	Drftg. 7	Drftg. 7
Gumm, J.	33	Cloth. 7-8	Cloth. 7-8	Cloth. 7-8	Cloth. 7-8
Kelly, P.	22	Conf.	Art-Craft 7-8	Art 7	Art 7
Liemohn, M.	8	Conf.	Soc. Sci. 7	Soc. Sci. 7	Soc. Sci. 7
Mangold, V.		Conf.	P.E. 8	P.E. 8	P.E. 8
Manthey, W.	19	Conf.	Conf.	Soc. Sci. 8	Soc. Sci. 8
McHugh, G.	28				
McMoyler, H.	21	Conf.	Soc. Sci. 8	Soc. Sci. 8	Soc. Sci. 8
Murphy, S.	4	EMR	EMR	EMR	EMR
O'Neilin, F.	20	Conf.	Conf.	Health 8	Health 8
Ostrye, M.	16	Conf.	Eng. 8	Eng. 8	Eng. 8
Ostrye, P.	31	Phys. Sci. 7	Phys. Sci. 7	Phys. Sci. 7	Phys. Sci. 7
Parotti, J.		P.E. 7	P.E. 7	P.E. 7	P.E. 7
Peters, J.	27	Conf.	Math 8	Math 8	Math 8
Ramsey, R.	29	Conf.	Conf.	Gen. Music 7	Gen. Music 7
Salter, L.	29		Treblers 8	Conf.	Lunch
Seasholtz, E.	34	Foods 7-8	Foods 7-8	Foods 7-8	Foods 7-8
Simmons, B.	17	Conf.	Conf.	Eng. 8	Eng. 8
Sublett, N.	30	Science 8	Science 8	Zoology 8	Zoology 8
Wallace, D.	7	Conf.	Conf.	Health 7	Health 7
Williams, W.	24	Plastics-Wds 8	Plstc-Wds. 8	Plstc-Wds. 8	Plstc-Wds. 8
Wilson, M.		P.E. 7-8	P.E. 7	P.E. 7	P.E. 7

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1968-1969

PERIOD 5	PERIOD 6	PERIOD 7	PERIOD 8	PERIOD 9
Math 8	Lunch	Math 7	Math 7	Math 7
Lunch	Reading Imp. 7-8	Conf.	TV Prod. 8	Sci. 8
Lunch	Pub. Spkg. 7-8	Careers/Econ.	Careers/Econ.	Conf.
Con. Band 1 7/8	Con. Band 2 7-8			
Lunch	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th			Conf.
Lunch				Conf.
Lunch				Conf.
Lunch	Conf.	P.E. 8	P.E. 7-8	Conf.
Leadership 7-8	Leadership 7-8	Eng. 7	Math 8	Math 8
Lunch	Conf.	60 students - 2 teachers - 1 aide English, Journalism, Social Science (MGM Program) 7-8		
Lunch	Journalism 8			
Lunch	French 7-8	Am. Procds. 7	Am. Procds. 7	Conf.
E.H.	E.H.	Lunch	Conf.	Conf.
Math-MGM 7	Lunch	Math-MGM 8	Conf.	Conf.
Math 7	Lunch	Math 7	Math 7	Math 7
Opp. Class 7-8	Crt. Wrtg. 7-8	Lunch	Conf.	Conf.
Lunch	Typing 7	Typing 8	Typing 8	Typing 7
Lunch	Conf.	Soc. Sci. 8	Soc. Sci. 8	Soc. Sci. 8
Conf.	Lunch	Drftg. 7	Drftg. 7	Drftg. 7
Lunch	Conf.	Cloth. 7-8	Cloth. 7-8	Cloth. 7-8
Lunch	Art-Craft 7-8	Art 7	Art 7	Conf.
Soc. Sci. 7	Lunch	Conf.	Soc. Sci. MGM 8	Soc. Sci. 7
Conf.	Lunch	P.E. 8	P.E. 8	P.E. 7-8
Soc. Sci. 8	Lunch	Soc. Sci. 7	Soc. Sci. 7	Soc. Sci. 7
	Orchestra 7-8			
Lunch	Soc. Sci. 8	Conf.	Soc. Sci. 8	Soc. Sci. 8
EMR	EMR	Lunch	Conf.	Conf.
Soc. Sci. 7	Lunch	Health 8	Health 8	Arts-Crafts 7-8
Eng. 7	Lunch	Conf.	Eng. 8	Eng. 8
Conf.	Lunch	Phys. Sci. 7	Phys. Sci. 7	Conf.
Lunch	Typing 7-8	P.E. 7	Conf.	P.E. 7-8
Lunch	Conf.	Math 8	Math 8	Math 8
Study Hall (28)	Lunch	Gen. Music 7(28)	Gen. Music 7 (28)	Sci. 7 (31)
Music 7-8	Con. Ch. Music	Trubdrs. 7-8	Treblers 7	Conf.
Lunch	Conf.	Foods 7-8	Foods 7-8	Foods 7-8
Eng. 8	Lunch	Eng. 7	Eng. 7	Eng. 7
Conf.	Lunch	Science 8	Science 8	Conf.
Lunch	Study Hall (23)	Health 7	Health 7	Eng. 7
Conf.	Lunch	Plstc-Wds. 8	Plstc-Wds. 8	Plstc.Wds. 8
Conf.	Lunch	P.E. 7	P.E. 7	Conf.

MASTER SCHEDULE – YEAR 2

	RM	PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 4
Aguilera, J.	18	Conf.	Conf.	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 8th	
Manthey, W.	19	Conf.	Conf.		
Simmons, B.	17	Conf.	Conf.		
Avakian, G.	11	Conf.	Speed Rdg. 7-8	Reading Imp.7-8	Eng. 7
Ball, M.	32	Eng. 7	Conf.	Careers/Econ	Careers/Econ
Beardsley, E.	28				Beg. Band 7
Bell, A.	1	Conf.	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th		
Ronning, N.	2	Conf.			
Zook, B.J.	3	Conf.			
Brown, W.		P.E. 8	P.E. 8	P.E. 8	P.E. 8
Brunier, C.	12	Conf.	Conf.	Eng. 7	Lunch
Clements, M.	26	Conf.	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 8th		
Greer, B.	25	Conf.			
Peters, J.	27	Conf.			
Coccaro, J.	13	Conf.	Pub. Spkg. 7-8	Am. Procds. 7	Am. Procds. 7
Colburn, B.	5	Conf.	E.H.	E.H.	E.H.
Cubberly, L.	P1	Math 8	Math 8	Math 8	Math 8
Cullinane, E.	28	Conf.	Math 7	Math 7	Conf.
Davidson, L.	14	Conf.	Opp. Class 7-8	Opp. Class 7-8	Opp. Class 7-8
Elman, L.	15	Conf.	Typing 7	Typing 8	Typing 8
Grubbs, R.	23	Drft. 7	Drft. 7	Drft. 7	Drft. 7
Gumm, J.	33	Cloth. 7-8	Cloth. 7-8	Cloth. 7-8	Cloth. 7-8
Kelly, P.	22	Conf.	Art-Craft 7-8	Art - 7	Art - 7
Liemohn, M.	8	Conf.	Soc. Sci.7	Soc. Sci. 7	Soc. Sci. 7
Mangold, V.		Conf.	P.E. 8	P.E. 8	P.E. 8
McHugh, G.	28				
McMoyler, H.	21	Conf.	Soc. Sci. 8	Soc. Sci. 8	Soc. Sci. 8
Murphy, S.	4	EMR	EMR	EMR	EMR
O'Neillin, F.	20	Conf.	Conf.	Health 8	Health 8
Ostrye, M.	16	Conf.	Eng. 8	Eng. 8	Eng. 8
Ostrye, P.	31	Phys. Sci. 7	Phys. Sci. 7	Phys. Sci. 7	Phys. Sci. 7
Parotti, J.		P.E. 7	P.E. 7	P.E. 7	P.E. 7
Reedy, M.	29	Conf.	Conf.	Gen. Music 7	Gen. Music 7
Ross, M.	6	Conf.	Crt. Wrtg. 8	Minr. Cult. 8	Minr. Cult. 8
Salter, L.	29		Treblers 8	Conf.	Lunch
Seasholtz, E.	34	Foods 7-8	Foods 7-8	Foods 7-8	Foods 7-8
Sublett, N.	30	Science 8	Science 8	Zoology 8	Zoology 8
Wallace, D.	7	Conf.	Conf.	Health 7	Health 7
Williams, W.	24	Plastics-Wds 8	Plst-Woods 8	Plst-Woods 8	Plst-Woods 8
Wilson, M.		P.E. 7-8	P.E. 7	P.E. 7	P.E. 7

1969-1970

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PERIOD 5	PERIOD 6	PERIOD 7	PERIOD 8	PERIOD 9
	Lunch	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th		
	Lunch			
	Lunch			
Lunch	Reading Imp. 7-8	Conf.	TV Prod. 8	Sci. 8 (30)
Lunch	Pub. Spkg. 7-8	Careers/Econ	Careers/Econ	Conf.
Con. Band 7-8	Con. Band 7-8			
Lunch	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th			Conf.
Lunch				Conf.
Lunch				Conf.
Lunch	Conf.	P.E. 8	P.E. 7-8	Conf.
Leadership 7-8	Leadership 7-8	Eng. 7	Math 8	Math 8
Lunch	Conf.	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 8th		
Lunch	Conf.			
Lunch	Conf.			
Lunch	French 7-8	Am. Procds. 7	Am. Procds. 7	Conf.
E.H.	E.H.	Lunch	Conf.	Conf.
Math MGM - 7	Lunch	Math MGM-8	Conf.	Conf.
Math 7	Lunch	Math 7	Math 7	Math 7
Opp. Class 7-8	Crt. Wrtg. 7-8	Lunch	Conf.	Conf.
Lunch	Typing 7	Typing 8	Typing 8	Typing 7
Conf.	Lunch	Drft. 7	Drft. 7	Drft. 7
Lunch	Conf.	Cloth. 7-8	Cloth. 7-8	Cloth. 7-8
Lunch	Art-Craft 7-8	Art - 7	Art - 7	Conf.
Soc. Sci 7	Lunch	Conf.	Soc. Sci.MGM-8	Soc. Sci. 7
Conf.	Lunch	P.E. 8	P.E. 8	P.E. 7-8
	Orchestra 7-8			
Lunch	Soc. Sci. 8	Conf.	Soc. Sci 8	Soc. Sci. 8
EMR	EMR	Lunch	Conf.	Conf.
Soc. Sci 7	Lunch	Health 8	Health 8	Arts-Crafts 7-8
Eng. 7	Lunch	Conf.	Eng. 8	Eng. 8
Conf.	Lunch	Phys. Sci. 7	Phys. Sci. 7	Conf.
Lunch	Typing 7-8	P.E. 7	Conf.	P.E. 7-8
Study Hall (6)	Lunch	Gen. Music 7 (28)	Gen. Music 7 (28)	Sci. 7 (31)
Lunch	Jrnlsm. 8	Minr. Cult. 8	Min. Cult. 8	Conf.
Music 7-8	Con. Choir	Trubdrs. 7-8	Treblers 7	Conf.
Lunch	Conf.	Foods 7-8	Foods 7-8	Foods 7-8
Conf.	Lunch	Science 8	Science 8	Conf.
Lunch	Study Hall (23)	Health 7	Health 7	Eng. 7
Conf.	Lunch	Plst-Woods 8	Plst-Woods 8	Plst-Woods 8
Conf.	Lunch	P.E. 7	P.E. 7	Conf.

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MASTER SCHEDULE – YEAR 3

	PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 4
Knaggs, K.	120-130 students - 4 teachers - 2 aides Reading, Spelling, Linguistics, Mathematics, Social Science, Art, Music 6th			
Lebrecht, S.				
Black, G.				
West, L.				P.E. 6
Jordan, C.	120-130 students - 4 teachers - 2 aides Reading, Spelling, Linguistics, Mathematics, Social Science, Art, Music 6th			
Kelley, L.				
Morton, D.				
Daignault, E.				P.E. 6
Bell, A.	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th			
Ronning, N.				
Zook, B.				
Aguilera, J.	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th			
Simmons, B.				
Manthey, W.				
Brunier, C.	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 8th			
McMoyler, H.				
Ostrye, M.				
Ostrye, P.	130-140 students - 5 teachers - ½ aide Physical Science, Health/U.S. Sub-Cultures, Industrial Arts Experience or Home Arts Experience, General Art (one semester each) 7th			Study Hall
Wallace, D.				
Grubbs, R.				
Elmer, S.				
Kelly, P.				
Sublett, N.	130-140 students - 4 teachers - ½ aide Life Science, Health/Human Interaction, Typing/Careers, General Music (one semester each) 8th			Zoology
Davidson, L.				Study Hall
Elman, L.				Typing
Davies, D.				
Conklin, L.				Comb. Chorus
Cubberly, L.	Remedial Math 6	Remedial Math 6	Remedial Math 6	
Parotti, J.	PE.	P.E.	P.E.	
Wilson, M.	P.E.	P.E.	P.E.	
Avakian, G.				Speed Rdg.
Rainey, H.	Reading Clinic	Reading Clinic	Reading Clinic	
Beardsley, E.				Con. Band I
McHugh, G.				Orchestra
Gilbertson, D.	E.H.	E.H.	E.H.	E.H.
Pittam, Robert	E.H.	E.H.	E.H.	E.H.

1970-1971

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PERIOD 5	PERIOD 6	PERIOD 7	PERIOD 8	ROOM #
	120-130 students - 4 teachers - 2 aides Reading, Spelling, Linguistics, Mathematics, Social Science, Art, Music 6th			18
				16
				19
				20
P.E. 6	120-130 students - 4 teachers - 2 aides Reading, Spelling, Linguistics, Mathematics Social Science, Art, Music 6th			21
				22
				15
P.E. 6				17
	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th			1
				3
				2
	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 8th			26
				27
				25
	90-100 students - 3 teachers - 1 aide English, Mathematics, Social Science 8th			14
				12
				13
	130-140 students - 5 teachers - ½ aide Physical Science, Health/U.S. Sub-Cultures, Industrial Arts Experience or Home Arts Experience, General Art (one semester each) 7th			31
Drama/Debate				7
Arch. Modeling				24
Jour.-Crea. Wr.				34
Arts/Crafts				23
	130-140 students - 4 teachers - ½ aide Life Science, Health/Human Interaction, Typing/Careers, General Music (one semester each) 8th			30
				8
				32
Study Hall				29
				29
	Algebra I	Algebra MGM	Algebra I	Port 1
	P.E.	P.E.	P.E.	Gym
	P.E.	P.E.	P.E.	Gym
	Life Sci. (30)			6
	Reading Clinic	Reading Clinic	Reading Clinic	11
Con. Band II				28
Beg. Strings				Aud.
E.H.				33
E.H.				33

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MASTER SCHEDULE – YEAR 4

	PERIOD 1	PERIOD 2	PERIOD 3	LUNCH/ PERIOD 4
Knaggs, K.	80-90 students - 3 teachers - 1 aide English, Mathematics, Social Studies 6th			
Lebrecht, S.				
Black, G.				
Kelley, L.	80-90 students - 3 teachers - 2 aides Art/Music, Physical Education, Science 6th			
West, L.				
Teacher "X"				
Daignault, E.	80-90 students - 3 teachers - 1 aide English, Mathematics, Social Science 6th			
Cubberly, L.				
Rainey, H.				
Bell, A.	80-90 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th			
Ronning, N.				
Zook, B.J.				
Aguilera, J.	80-90 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th			
Simmons, B.				
Manthey, W.				
Jordan, C.	80-90 students - 3 teachers - 1 aide English, Mathematics, Social Science 7th			
McMoyler, H.				
Ostrye, M.				
Wallace, D.	90-100 students - 4 teachers - 1 aide Health, Ecology, Industrial Arts Experience, Home Arts Experience (12 wks. each) 8th			
Ostrye, P.				
Grubbs, R.				
Elmer, S.				
Morton, D.	90-100 students - 3 teachers - 1 aide Life Science, Arts/Crafts, Human Interaction (12 wks. each) 8th			
Kelly, P.				
Davidson, L.				
Avakian, G.				
Beardsley, E.				
McHugh, G.				
Conklin, L.				
Parotti, J.	P.E. 7-8	P.E. 7-8	P.E. 7-8	
Wilson, M.	P.E. 7-8	P.E. 7-8	P.E. 7-8	
Gilbertson, D.	E.H.	E.H.	E.H.	E.H.
Pittam, R.	E.H.	E.H.	E.H.	E.H.

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1971-1972

PERIOD 5	PERIOD 6	PERIOD 7	PERIOD 8	ROOM #
80-90 students - 3 teachers - 1 aide English, Mathematics, Social Science 6th				18
				17
				19
150-160 students - 4 teachers - 3 aides Art/Music, Physical Education, Science 6th				22
				20
				21
				15
Algebra	Math/Clinic		Algebra	Port. 1
Reading Clinic	Reading Clinic	Reading Clinic	Formula Phonics Reading Tutors	11
80-90 students - 3 teachers - 1 aide English, Mathematics, Social Science 8th				1
				3
				2
80-90 students - 3 teachers - 1 aide English, Mathematics, Social Science 8th				26
				27
				25
80-90 students - 3 teachers - 1 aide English, Mathematics, Social Science 8th				14
				12
				13
90-100 students - 4 teachers - 1 aide Physical Science, U.S./Sub-Cultures, Industrial Arts Experience, Home Arts Experience (12 wks. each) 7th			Drama/Debate	32
				31
			nd. Arts Wrkshp.	24
			Journalism	34
90-100 students - 3 teachers - 1 aide General Art, Health, Communications (12 wks. each) 7th				7
				23
				8
			Cinematography	6
			Con. Band 6-7-8	28
			Orchestra	Aud
			Choir	29
P.E. 7-8	P.E. 7-8	P.E. 7-8		Gym
P.E. 7-8	P.E. 7-8	P.E. 7-8		Gym
				33
				33

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Summary

The articles in this section were primarily concerned with describing two "models" for the effective use of staff --the Model Schools Project and the Pontoon Transitional Design. These models were offered because they are comprehensive in nature and make provision for gradual adoption.

The Model Schools Project as described by Trump and Georgiades is significant in that it provides for a comprehensive system for individualization. Based on the concept that there are many factors which affect student learning, the "Model" is attempting to combine several educational innovations into one program. In contrast, the Pontoon Transitional Design focuses on staff utilization and presents a vehicle for the gradual implementation of flexibility of time and group size. By utilizing volunteers and back-to-back scheduling, only those teachers who desire to participate are involved; for the rest of the school the schedule remains the same.

Perhaps the true test of any concept is its workability in the school setting. Gyves has described how the "pontoon" concept has lead to the gradual implementation of an individualized program over a four-year period of time. The master schedules for each of the four years graphically illustrate the changes that have taken place.

While the focus of this section has been directed toward effective staff utilization programs, it should be reemphasized that this area is only one part of a comprehensive system of individualized instruction. The succeeding sections will discuss the components of continuous progress curriculum, staff roles and training, and evaluation of individualized programs. Attempts will be made to discuss the interrelatedness of these components in the development of a comprehensive program for individualized learning.

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PART III

ORGANIZING THE CURRICULUM FOR INDIVIDUALIZED INSTRUCTION: CONTINUOUS PROGRESS AND PACKAGING

Introduction

This section is concerned with the organization of content in individualized programs. This includes the sequential organization of subject matter, and packaging it in a format suitable for student utilization.

The first article, developed by Constance Georgiades, deals with the concept of continuous progress as an approach to content sequencing as it relates to the Language Arts.

A crucial factor in implementing a continuous progress program is the development of methods or formats for the presentation of subject matter to students. The method utilized in most individualized programs is the curriculum "package." Georgiades and Ringis discuss the concept of "packaging," the various types available, and their relationships to the total instructional program.

Dr. William Georgiades was introduced in the preceding section. Dr. Constance Georgiades, currently an English teacher at Beverly Hills High School, has assisted school districts throughout the country in implementing continuous progress programs. Dr. R. Herbert Ringis has been both a teacher and administrator. He has had extensive experience with educational packaging and for several years was associated with UNIPAC Bank in Laguna Beach, California. Presently, Dr. Ringis is a Professor of Education at California State University, Dominguez Hills, California.

A CONTINUOUS PROGRESS APPROACH TO THE TEACHING OF THE LANGUAGE ARTS IN THE SECONDARY SCHOOL: A STEP TOWARD THE INDIVIDUALIZATION OF INSTRUCTION

By Constance Georgiades

INTRODUCTION

In his provocative book, The Mind as Nature, Loren Eiseley reminds the reader of the monumental role facing the educator, the role of the sculptor carving an intangible future. He clearly conveys the dimensions of the task when he says: "There is no more dangerous occupation on the planet, for what we conceive as our masterpiece may appear out of time to mock us--a horrible caricature of ourselves." Later in this same work, he says: "He is giving shapes to time, and the shapes themselves, driven by their own inner violence, wrench free of his control--must, if they are truly sculptured, surge like released genii from the classroom or, tragically, shrink to something less than bottle size . . . and each day by word or deed the chisel falling true or blind upon the future of some boy or girl."

Such is the nature of the tremendous task we face. Most of us admit that this task is not being affected in the most desirable way. Some children drop out of school, many refuse to participate in classroom activities, and other passively mark their time. Perhaps our grestest challenge lies in seeking a more meaningful experience in learning that will better meet individual needs of unique human beings.

Ironically, although we are living in the Space Age, current curricular practices belong to the era of the Wright brothers. Such practices are not only outmoded, but what is worse, they deny the existence of individual differences. They perpetuate mass instruction and demand that each child fit a given mold.

Although our schools must assume the responsibility for educating an increasing number of students with wide variations in backgrounds, abilities and interests, we continue to group students in classes chronologically with little or no consideration for the uniqueness of each child. Such grouping denies an elementary precept of education: students are individuals and as such learn at differing rates. At no one age will all students exhibit equal ability in all phases of the curriculum. In the field of language arts one can identify some basic skill areas. Primary among these are reading, writing, literary analysis, spelling, and syntax. At a given level it is difficult, in fact impossible, to find all students achieving at that grade level in all areas. In all probability, one out of five, or twenty per cent of a given class will be at grade level in all areas of instruction. Yet in spite of this fact, typical programs are organized so that students at given level all receive the same instruction which often result in frustration for some and boredom for others.

BASIC PROBLEMS

Frustration in learning has been compounded through the practice of promoting students lacking all of the prerequisite skills for the next grade level. For example, a given student may do well in all phases of a language arts curriculum with the exception of written composition, yet he is promoted and expected to perform at the next level. It is at this point that frustration begins to operate for he simply is not prepared for new experiences; he needs additional practice and reinforcement before moving on to another level. At the same time he should not be asked to review the entire level again but rather work only on the composition component of the curriculum.

Another problem common to the conventional pattern of organization is the tracking of students. Such a pattern builds upon the assumption that all students within these groups possess equal ability. Additionally, they tend to develop false notions of superiority and inferiority. Students grouped in an honors program for example, tend to feel that they are somewhat removed from those whose academic level is not commensurate to theirs. Those grouped in remedial sections tend to develop negative feelings about themselves. Such grouping does not allow students to look realistically at themselves.

A third problem arises in the failure of traditional programs to consider not only the different learning paces. Other than for one's own convenience, for what purpose do we ask students to learn at the same pace? The fact is that they learn at varying rates and asking all students to learn at the same rate simply bores some while insuring failure for others.

Recognizing these basic problems in traditional forms of curricular organization, many educators are looking at the continuous progress curriculum attempts to better reflect what we know about the way human beings learn and grow. Basic to such a design would be the belief the learning must:

1. Relate to individual needs
2. Begin where the learner is
3. Provide success
4. Accommodate various rates of learning

Although many schools have implemented a continuous progress curriculum, no two programs are identical for each school has unique characteristics that determine the program. Yet in each program there is one significant constant: removal of the choronological barriers that create unrealistic groupings of students into meaningless grades and allowing students to progress at their own rate.

ORGANIZING A CONTINUOUS PROGRESS LANGUAGE ARTS CURRICULUM

The continuous progress approach assists in individualizing instruction in the following ways:

1. encourages students to master prerequisites
2. eliminates needless repetition
3. provides a tailor-made curriculum for each student
4. acquaints the student with his particular strengths and weaknesses
5. gives the student the opportunity to work with a variety of teachers and the experience of working with students other than those at his own grade level
6. gives the student a voice in determining his language arts experience
7. gives the teacher an opportunity to specialize in a given area of instruction

The successful implementation of such a program can be assisted by a transitional approach. Through slight modification of the existing language arts curriculum, a more individualized program can be achieved before moving to total individualization which involves much more preparation time for creating materials and assisting students and teachers in assuming new roles.

The transitional model for language arts suggested here involves the following:

1. removal of grade designators
2. removal of achievement grouping
3. use of diagnosis and prescription
4. reorganization of each component of the language arts curriculum into curricular strands.

The following diagram demonstrates how a conventional curriculum might be restructured to accommodate a transitional program in which students are placed according to diagnosis in a given phase of the language arts curriculum.

It must be remembered that such a program in no way attempts to sever one phase of the curriculum from the other. Rather, in particular courses the emphasis will be on a particular component. For example, in a literature course a student will still be given written assignments in which he has an opportunity not only to personally react to a given piece of literature, but he has additional opportunity to develop his writing skills. In the same way, although a student might be enrolled in a composition course, he would be reading noted pieces of literature. This is a facet of the program that the students should thoroughly understand.

Length of Each Sequence

The transitional model can easily adapt to the conventional quarterly grading cycle. Each segment of the curriculum would then be designed for completion within a nine week time period. An experience in reading instruction, however, should last a minimum of one semester.

Obviously such an arrangement does not accommodate different learning rates. Movement from this transitional model to a continuous progress curriculum involves the removal of time barriers and the utilization of learning packages or other such materials that allow individual progress.

Placement

Placement is determined the year prior to the student's actual involvement in a given phase. In the third quarter of the ninth grade in the case of a three year high school, or in the third quarter of the eighth grade in a four year high school, all students should be evaluated to determine their proficiency in all areas of the language arts program. In the areas of spelling, vocabulary and reading, it has been found that the best means of evaluation are standardized examinations. However, in the fields of syntax, composition, and literature, teacher judgment appears most appropriate.

Instruments of Evaluation

There are many effective measures of achievement currently on the market. However, the following have been particularly effective:

Spelling: The Buckingham Extension of the Ayers test. This particular instrument measures spelling ability from grades one through nine.

Reading: In this area many tests are available. No matter which is used the reader must remember that the research reveals that practically all standardized reading tests produce scores that are typically two grade levels above the student's actual ability level. Tests that might be used are:

1. Gates Reading Survey, Grades 3.5-10
2. SRA Achievement Series: Reading, Grades 1-9

Vocabulary

The Educational Development Laboratories have developed a placement test to be used with their programmed materials. While giving the teacher a grade level achievement score, it also provides the teacher with specific information regarding the appropriate material for beginning instruction.

Scheduling

After having evaluated each student in these phases of the curriculum, the teacher is ready to sit down and have an individual conference with each student. He advises the student of his general performance level in each of the

Reading	Reading 11 Achievement level: grade 6 and below	Reading 12 Achievement of grade 3 to grade 6	Reading 13 Achievement level of grade 10-8	Reading 14 Advanced Reading Skills Achievement at grade level			
Spelling and Vocabulary	21 Fundamental Spelling and Vocabulary	22 Developmental Spelling and Vocabulary	23 History & Development of the Language				
Oral Communication	Small group discussion	Oral Composition	Debate				

Composition	41 Practical Composition	42 Theme Development 1	43 Theme Development 11	44a Expository Writing	44b Expository Writing	45 Advanced Composition	46 Creative Writing
Literature	51 Responding to Fiction	52 Responding to Poetry	53 The American in Literature	54 Contemporary Literature	55 Dramatic Literature	56a Literature for College 1	56b Literature for College 11
Special Courses	61 Survey Mass Media	62 Bible as Literature	63 Mythology	64 Shakespeare	65 Seminar for Advanced Study		

various areas and makes recommendations based upon data obtained. A built-in requirement of the program is that if a student is found to be deficient in the areas of reading, including vocabulary and comprehension, that he first be enrolled in courses providing work in these areas, as it is believed that success in other courses is contingent upon success with reading the written word. The teacher and student then select a given number of courses in which the student will be enrolled for the coming year. In the case of the school operated on a quarter basis the student would therefore be enrolled in four "blocks" of courses.

SAMPLE STUDENT SCHEDULE

For an average student entering the 10th grade, his schedule might look like the following:

Grade 10: Composition 42, Literature 51 and 52, and Reading 14.
Grade 11: Composition 43 and 44, Literature 53 and 54.
Grade 12: Composition 44a and 44b, Literature 56 and 57.

On the other hand, a schedule for a less academically talented student might look like the following:

Grade 10: Reading 12 for a semester, Composition 41, Vocabulary 21.
Grade 11: Reading 13, Composition 42, Vocabulary 22.
Grade 12: Literature 51, 15, Composition 43, Survey of the Mass Media.

It should be noted that such a program provides additional experiences for the language arts oriented student. For example, one might take two Language Arts courses per nine weeks. In such a case the student would simply be using another language course as one of his electives.

SAMPLE TEACHER SCHEDULE

From the teacher's point of view the continuous progress program holds numerous advantages. One of the chief advantages in the opportunity to allow teachers to become subject matter specialists. Teachers can focus on those courses for which they have the best preparation, and the greatest interest. For a given quarter the teacher's schedule might look like the following:

First Quarter: Period 1 - Shakespeare
Period 2 - Shakespeare
Period 3 - Composition 44a
Period 4 - Preparation
Period 5 - Composition 44a
Period 6 - Spelling and Vocabulary 22

Although a given teacher may have three preparations within a particular quarter, it must be remembered that he might repeat one or more of the assigned courses in another quarter.

SUGGESTED SEQUENCE

As an aid to one attempting to implement a continuous progress language arts program, the following sequence is suggested:

Consideration of local needs
Survey of student interest
Devising course outlines and criteria for placement
Testing of students
Explanation to junior high teachers of criteria for placement
Placement of students
Allotment of materials

CONCLUSION

The continuous progress approach to the teaching of language arts holds tremendous promise for the individualizing of instruction. It should be noted that the model suggested in this paper is a transitional design intended to be used as one step in progressing toward continuous progress. Not until all time barriers are removed, and student schedules reflect individual needs will we have arrived at our objectives.

This design has been used successfully in many schools. Evaluative studies reveal significantly cognitive gains made by students. Yet perhaps the effectiveness of any program is best reflected in the way students feel about it. The following paragraphs were written by a student after having been involved in such a program for three quarters. Such student comment speaks for itself.

"CONTINUOUS PROGRESS ENGLISH"

"Some of the advantages of a Non-Graded English program, I think, are getting to meet different teachers, and knowing just how much of a difference their personalities can be. To me, being with the same teacher for the whole school year or 180 days could be sort of boring. Last year where I lived, I had the same English teacher for the whole year and my teacher seemed very cold and didn't bother to meet any of us any further than to know our names. I also feel that having different teachers and different courses every nine weeks takes pressure off the students and also makes the school year seem to go much faster."

"It doesn't make the class seem too hard yet lasting too long. You have more and yet less time to concentrate just on that one subject. I feel comfortable in this system, due to the fact that the competition has vanished between the classmates and you have the chance of meeting your fellow upperclassmen."

"In some classes you might have a little fun, but in others it might be just one complete drag. I think it's a great opportunity to be in the same class with the upperclassmen of my school."

"Some of the disadvantages could be getting it with the same students you were with before. They are the students who are always making trouble and wasting the teachers time. Yet there are some students who always keep the class behind, along with the student. I think that sometimes some teachers expect just too much from their students."

"Some teachers teach too fast so they really have the students hanging or else the students don't catch on to the teachers teaching habits."

"I also think there should be a few more classes added; because for one thing, I think Shakespeare should be added because I've always wanted to study Shakespeare; and many students don't like to take notes properly, so there should be a class where hints on note taking should be mandatory.

"My decision is to stay with the continuous progress system because it is a much better way to learn and meet new and interesting people."

INTRODUCTION: THE ADVENT OF PACKAGES

By William Georgiades

During the 1960's innumerable new practices emerged in American education. Ideas such as team teaching, non-gradedness, continuous progress, flexible scheduling and a multitude of other structural changes occurred. However limited structural changes in education may be, they can provide new possibilities and new potential for improved educational systems.

Before such systems can become truly functional, the question of appropriate curriculum materials with clearly defined objectives and carefully developed sequences must be resolved. It is ludicrous to talk about continuous progress education, non-gradedness, etc., without reviewing the arrangement and design of the curriculum itself. In an effort to cope with these concerns, curriculum packages have been formulated and used in numerous school systems.

BACKGROUND

Some of the more common formats and package designs have been organized under IPI, UNIPAC, LAP, the Duluth contract system, and Westinghouse Learning Corporation's (Project PLAN) TLUs. Such efforts have attempted to sequentially arrange the curriculum in small components which clearly state performance objectives so that the student may proceed at his own rate of learning in what I would prefer to call "self-paced" learning. Packages have typically been a self-contained set of teaching-learning materials designed to teach a single concept or idea and structured for individual and independent use in a continuous progress school program.

The curriculum package bank originally generated by the Charles F. Kettering Foundation is an example of a national effort to facilitate both the development and exchange of packages. Commercial efforts such as IPI from the University of Pittsburgh, and Westinghouse have made available commercially prepared packages, sequentially arranged for school use.

IMPLICATIONS FOR INNOVATION AND CHANGE

Many problems plague the use of such materials as curriculum packages. In the initial years of these develop-

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Georgiades, William. "Introduction: The Advent of Packages." Journal of Secondary Education, Vol. 46, No. 5, May, 1971, pp. 199-200.

ments quality control is often missing and too many packages offer a monolithic approach to the learning goal--reading. Frequently, poor classroom implementation destroys the effectiveness of the best designed package. Another serious limitation in the preparation of packages is the amount of teacher time required for development and writing.

In spite of these and other problems, curriculum packages offer polygamous avenues to learning goals and when included as part of a total instructional system can contribute to the achievement of the goal of genuinely individualized education for all American youth. Used in combination with a variety of other instructional media and methodology they can facilitate "self-paced" learning and produce a higher level of success for all students. Used in isolation from such considerations they can provide one more experience in educational "boredom," an objective which many youth now believe schools have already successfully achieved.

THE GESTALT OF CHANGE

To change one element in a school climate may be somewhat comparable to attempting to kill an elephant with a thumb tack. To change a school demands that one consider the wide range of variables that constitute a school. Experience in such efforts as the Model School Project of the National Association of Secondary School Principals has taught us that change does not take place until new patterns of thought and conceptionalization have been internalized. Innovations have rarely been adopted as a systematic-interrelated totality. Consequently, an innovative variable, such as curriculum packages, whatever its potential, has often been nullified by conventional practices in other areas. Change in school systems must therefore be planned from a "total" or "gestalt" perspective.

Curriculum packages can make a contribution to meaningful change in American education. They can assist substantially in facilitating individualized instructional systems. They can help such "structures" for change as continuous progress, non-gradedness, and independent study truly reflect new ways of aiding students to reach worthwhile learning goals. The package movement is but one component in a plethora of educational change. It is, however, a vital component which can help us reach our dream of individualized learning for all of our children and youth.

WHAT IS "AN INSTRUCTIONAL PACKAGE?"

By R. Herbert Ringis

Just as all cakes are the same, so are they all different. Even among Angel Food cakes there are differences in texture, consistency, flavor, lightness and appearance. The same can be said of instructional packages--while they are all different, they are yet the same. As with cakes, there are common ingredients in packages, whether the package is an LAP, UNIPAC, TLU, or Shadyside High School's own creation. This sameness of ingredients is not always apparent. Sometimes identification of an ingredient is easily visible to the casual viewer; at other times the inclusion of an ingredient is only implied. However, to be classified as an instructional package, there are specific characteristics which usually are readily discernible.

This sameness, in part, is attributable to their application and proposed method of use in the educational program. In its simplest form, a package can be considered a "lesson plan" for an individual learner. It is designed and structured with similar characteristics as would be found in lesson plans used by teachers for their own instructional purposes. It is this "nature" which keeps the various types of packages similar in their ingredients. However, because it is to be used by the individual learner, there are some characteristics unique to the package in its format, such as directions and instructions for the learner to follow as he proceeds through the package. The attributes which are necessary for their use do not detract from the commonality of basic ingredients. Just as the frosting on a cake does not dictate what the inside of the cake will be, so do the basic ingredients required of a package not dictate what the final product will be.

There are usually six specific ingredients which form the skeletal structure of packages:

1. Concept focus
2. Behaviorally-stated objectives
3. Multiple activities and methodologies
4. Diversified learning resources
5. Evaluation instrumentation
6. Breadth and/or depth suggestions

It is the intent of this article to describe each ingredient and explain the function as it facilitates the learning process for students using packages.

Ringis, R. Herbert. "What Is an'Instructional Package?'" Journal of Secondary Education, Vol. 46, No. 5, May, 1971, pp. 201-205.

CONCEPT FOCUS

Most packages are designed to deal with a single concept; or put another way, a package can deal with a single idea, a single psychomotor skill, or a single attitude. The concept focus of a package determines three variables: (1) the package's suitability for a specific learner, (2) the scope and coverage of the subject, and (3) the internal consistency of the package elements as well as the validity of its content. Most packages draw their concept focus from existing courses of study. Within any course of study, there are broad generalizations, usually referred to as "units," and within these units there are discrete "clusters" of concepts which form the structure of these units. It is the selection of a single concept from this structure which determines the focus of the package. The number of packages for any one unit or course of study depends on the subject matter and the complexity of that particular aspect of the curriculum. The concept chosen for a particular package will dictate that package's place in the total scheme of curriculum.

With the choice of concept focus must be matched the expected level of performance of the learners who will become involved in that package. There is usually some delimitation placed on the scope of that concept focus, either through the extent of treatment within the package or through the inclusion or exclusion of content. In some packages the concept is expressed in major and minor divisions. In other packages this division is labeled as "primary idea" and "secondary idea." The choice of concept and its delimitation directly affects the suitability of the package for a particular learner. The scope of the concept will also directly affect the length and structure of the package.

The size of the concept the learner is expected to deal with in the package is in direct relationship to the determination of the concept focus. For one level of learner a package may be limited to a single primary idea to be dealt with, whereas for a higher ability youngster the package may have a primary idea and several secondary ideas. However, whatever secondary ideas or sub-concepts are contained within the scope of the package, they must relate directly to each other and to the major idea or concept. It is the single concept focus which sets the package apart from textbooks or a student syllabus to be used during the entire semester or school year.

BEHAVIORALLY-STATED OBJECTIVES

Objectives within packages form perhaps the keystone to their success or failure. These objectives should translate the concept into a recognizable form for the learner. As he proceeds in a self-directed manner these objectives must have been internalized and have formulated his understanding of what is expected as the outcome from his efforts with the package. The objective statements must be in terms comprehensible to the learner. Objectives usually tell the learner what performance is expected of him, under what conditions this performance will take place, and the proficiency of the expected performance. It is the self-directedness of the package which requires the objectives to be clearly stated and understood by the learner. Objectives provide the guidance for his learning experiences which are contained in the remainder of the package. In effect, these objectives give the learner the "why" of his learning, yet without specifying the "how" to arrive at that learning.

MULTIPLE ACTIVITIES AND METHODOLOGIES

The learning activities within the package form the "meat" of the package, just as the objectives form the "heart." While the objectives set forth the way the learner will "know" he has achieved learning, the activities set forth the "how to get there." The package describes various ways a learner may deal with the concept; through experimentation, group work, independent study, observation, construction, research, or by using materials and media. After having clearly established, through the objectives, the "why" of the learning activities, the learner exercises his self-direction by the choices he makes from the multiple activities presented in the package. Whatever activities there are within the package, they should all provide a path for the learner to follow. The multiplicity of activities is based on the belief that there is no one best way for any one learner to learn. In some respects, this presentation of multiple ways to the objectives forces the learner into decision making, and places the responsibility for selecting his future course of action onto the individual. This multiplicity also attempts to relieve the "sameness" of the educational process by providing variety in the instructional environment. It also tries to provide for different "styles" of learning.

The activities are usually listed as choices to be made. The instructions to the learner give him the alternatives available within each segment of the package. The learner can elect to work alone, or in concert with others, depending on the nature of the concept and the procedures of the class or group with which he is associated. Activities chosen in one section may or may not be repeated in later sections of the package.

DIVERSIFIED RESOURCES

Within the activities listed for the learner, in addition to the multiple methodologies, there should be a variety of materials and media. For his path to an objective the learner can choose to work with any or all of the resources, such as filmstrip, record, tape, sound filmstrip, chart, diagram, video tape recording, model, etc. These resources may operate singly or in combination to assist the learner toward the objectives and concept formation. Ideally, the package should have more than one resource of each type which deals with the concept under study. Of course, this is not always possible, but with some concepts, instructional materials and media exist in great quantities, each offering a difference in approach. Just as with the multiple activities and methodologies, this diversity is provided to allow for variations in the styles of learning. Where one filmstrip may be the means for one learner, another filmstrip may be most suitable for a different learner. While the package is designed with a category of learner in mind, that is, with a pupil learning need identified, it is not necessarily designed for one specific predetermined pupil. Unfortunately, our methods for diagnosis of learning needs and the application of a prescription to that need are not sophisticated enough to allow for finality of design.

EVALUATION INSTRUMENTATION

The evaluation within packages usually falls into three types: (1) pretest, (2) selftest, and (3) posttest. In a basic sense, this allows for assessment of entry, progress and exit status of the individual. In some packages, all three tests are contained in the package; in others, only the selftest is within the package and the pretest and posttest are maintained in some other fashion and await the requirement on the part of the learner before they are used. In some package systems, the pretest and posttest are almost identical.[1]

The pretest serves three functions; assessing readiness for the package, determining prerequisite abilities, and providing a basis for decisions regarding where, and with what part of the package the learner will begin. If the package has been designed with a major idea, and several secondary ideas, it is possible for any one learner to have expertise with one of the secondary ideas at a sufficient level to option out of that part of the package. It is also possible that any one individual diagnosed as having need for the concept of the package may not have the necessary prerequisite abilities to deal with that concept on the level called for by the learning activities and resources spelled out in the package. As a side benefit, the pretest "sets the stage" for the learner and provides an introduction to the package.

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[1] For a more extensive discussion of this aspect of using packages, see the following article by Roger Tunks. (Article appeared in Journal of Secondary Education, May, 1971.)

While in some packages the pretest may be omitted, the selftests are required for they provide the learner with check points as he proceeds along the paths towards the objectives. Selftests give reinforcement of progress as well as a means for keeping on the track while proceeding under self-direction. Self-tests are usually not elaborate or time consuming; nor do they determine complete mastery as called for in the objectives. Although these selftests may measure accomplishment of learning similar to those specified in the objectives, they need not be so extensive as to duplicate the posttest.

The posttest provides the learner and the teacher with the means to assess whether or not the learner has reached the objectives and has gained a sufficient achievement level to exit the package. Usually, the posttest measures only those performances specified in the behaviorally-stated objectives. If the objectives revealed to the learner at the outset called for performances in six areas, then the posttest would measure only those six areas. The posttest does not necessarily have to be a paper and pencil examination. If the nature of the concept, and the performance objectives written for it, called for a construction, an oral performance, or for completion of a laboratory project, then examination of such a product would constitute the posttest. Some packages require the learner to use accumulative experiences wherein the total sum of the learner's efforts throughout the package are examined at the conclusion. In those cases, the objectives would have called for the end product to be a diary, an experimental log, or such other device which recorded all his efforts for the time spent on the package. Perhaps the most important aspect of the posttest is that it provides closure for the learner; he experiences a sense of personal accomplishment. The learner knew what his objectives were, has worked through the learning activities, been exposed to various learning resources, and now the posttest has shown him he has achieved the specified performance called for in the objectives.

If the learner does not reach the performance specified in the objectives, the posttest provides a means for recycling the learner, either through additional learning experiences from the same package, or into another package. In any case, the learner has information regarding his performance which allows him to make judgments about that performance and what his future course of action should be. Thus, whether he has been successful or unsuccessful, there is data for determining future actions to be taken on the part of the learner.

BREADTH AND/OR DEPTH ACTIVITIES

After successful conclusion of the posttest, the learner is provided suggestions for further activities. These activities can be either an extension of the concept dealt with in the package, or deeper exploration of closely related concepts. Ideally, these activities should be initiated by the learner, and not be directive on the part of the teacher or at the dictates of the educational program. In the best sense, these activities should be in the nature of a quest on the part of the learner; something he undertakes out of enthusiasm and from "being turned on" by what he has already experienced from the package. These suggestions provide a means for bridging from one concept in one package to another concept in some other package. In the operation of some package programs, these "follow-up" activities create a means for managing a number of students as they work from package to package. If there is a sequence to a series of packages, the breadth and/or depth activities can provide guidance and the building of prerequisite abilities between packages.

Summary

In reviewing this section, it is important to reemphasize the importance of curriculum organization in the individualization of instruction. First of all, the sequencing of subject matter based on performance objectives provides the framework so important in planning and in evaluating. Secondly, a carefully sequenced curriculum is necessary if a student is to move through it at his own pace. The Continuous Progress Model as presented by Dr. Constance Georgiades offers both the framework of objectives and the sequencing needed for a truly individualized program.

Packaging, while not a new concept, offers many possibilities for personalizing learning. When integrated into a continuous progress sequence and utilized in conjunction with small group activities, the package can become a most effective instructional approach. However, it is important to weigh carefully the cautions suggested by Dr. William Georgiades.

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PART IV

INSERVICE PROGRAMS FOR THE CHANGE PROCESS

Introduction

In the previous sections we have dealt with the more mechanical aspects necessary for individualizing instruction. Two staff utilization models were offered which provided for greater flexibility of time and group size. Guidelines were suggested for sequencing content and developing and utilizing packages. This section deals with perhaps the most important aspect of all: the role of the professional and paraprofessional.

Teachers placed in teams for the first time find that new demands are placed upon them. They are called upon to perform in new ways and to assume new roles. In the initial article of this section Dr. William Georgiades discusses the team and the roles of the various team members. In the second article, he goes on to give concrete ideas for the utilization of large group, small group, and independent study.

If teachers are expected to assume new roles, then it seems logical that inservice programs should be developed that will (1) motivate teachers to desire change and (2) train teachers to perform effectively in new situations. Dr. Donald C. Clark and Mrs. Sally N. Clark offer suggestions for initiating the pontoon and for training teachers to use it as a means for obtaining maximum flexibility.

The last article in this section deals with instructional aides. A brief history of the development of the instructional aide program is given. Specific recommendations are then given for assisting teachers in making efficient use of aides. Also suggested are methods for orienting aides and the components for an instructional aide training program.

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WAYS IN WHICH TEAMS MAY FUNCTION

By William Georgiades

While it would be difficult to describe the many possible team arrangements, the following illustrates a fairly typical plan.

A team leader, a second teacher, and two aides have the joint responsibility of teaching large groups of students in the same subject area and grade for two hours during the day. Both teachers and aides are provided with and devote additional hours to planning and preparation to achieve this responsibility.

While it should be recognized that there is no "pat" formula as to percentage of time devoted to each type of activity, team operation typically incorporates a combination of three types of activity:

...Large group presentations
...Small group work and discussion
...Individual study

All of these three phases need to be interrelated. Team members should devise a plan in advance to take care of the process involved. An outline of what is to be taught and the order in which it is to be accomplished need to be carefully drawn up for the students, too.

1. Large Group Presentations

Large group presentations are arranged for motivational or introductory purposes, the presentation of audio-visual materials, general testing, and culminating unit activities, e.g., student panels, reports, and project displays.

Large groups offer opportunities for building background information for the whole course, presenting the work of small groups, general testing, and all phases of curricular offerings that can just as well be given to 100 or more as to 35 students. The main purpose of large group instruction is to give cohesiveness and to present major concepts and background information related to the course.

While care should be taken to avoid letting team work degenerate into the lecture method of teaching, some aspects of instruction especially lend themselves to large group presentation:

a. Introduction of New Topics
   Although some of the teacher-pupil interchange of ideas may be lost, there is a mass psychology reaction to a good introduction which builds extra enthusiasm.

b. Demonstrations
   In certain subjects, demonstrations requiring rather elaborate preparation can sometimes be presented just as effectively to large groups and thus save valuable time and/or expense.

c. Films
Films lend themselves to large presentation and facilitate scheduling as well as conserve time in preparation.

d. Resource Persons
A larger audience makes extensive use of outside resource personnel more feasible, and the investment of preparation time pays greater dividends.

e. Summations
After a unit has been studied in the smaller groups with library research and reports, demonstrations, lab work, etc., then it is possible to do an effective job of summation before testing.

The larger group presentations can be made more effective by using the public address system, the overhead projector, and other equipment of this nature. Unit outlines, demonstration worksheets, etc., can be placed in the hands of the student to make the presentation even more effective.

2. Small Group Activity

Some machinery needs to be set up so that students can come together in small groups. The purposes for such groups include working on special projects, study in specific areas, discussions to follow-up presentations, and preparing for panels or reports as culminating activities to a unit. Grouping may be based upon ability range, interest, achievement levels and accomplishments, e.g., skills in arithmetic or language.

Small study groups are set up to function in relationship with large group meetings and to accommodate a range of interests and abilities. Carefully planned study guides should be given to each student with very definite instructions. An ideal study group is made up of from six to twelve students. Each group should have a student leader and recorder.

In addition, library research, remedial and enrichment activities can be carried out through small study groups. The membership should be flexible, dependent upon need, interest, and purpose.

Intermediate size groups or combinations of groups, reaching in most cases the usual classroom size, are reserved for more detailed instruction, discussion periods, and general review.

The flexibility of the team arrangement permits daily grouping of students for many purposes and a greater variety of activities. However, grouping for the sake of grouping with no stated objectives would lessen the effectiveness of the program. The following illustrate the possibilities of grouping for special purposes:

a. The ability range can be narrowed. Several groups within the team can be working in texts adapted to their needs.
b. The teachers have opportunity to give aid to students doing independent study during class time, rather than after school as in a "regular" situation.

c. Small study group activities increase the opportunities for student participation and growth.

d. Students are able to work at their own speed of learning. Faster moving students can complete several projects to one by the slower students. Aides provide additional help to make this possible.

e. Guest speakers can be invited to enrich the program for many students without disrupting the total school program.

f. Lab groups can work through double periods whenever feasible, thereby making more effective use of time and expensive equipment.

3. Individual Study

Each student needs some kind of individual work program defined by him, with him, or for him.

Student study guides can be of considerable help in guiding the individual study and in enlisting the active participation of students in team learning. Study guides can be brief, but they should indicate to the student just where he fits into the picture. Only by seeing the reasons for the large group, small group, and independent study activities, will the student accept and perform his individual role appropriately. Such a guide would include:

a. An overview of the course of study. (The purpose, content to be covered, references, unit topics, and the major understandings to be learned.)

b. Typical group activities. (List of kinds of groups and their purposes, types of individual projects on which students might work.)

c. Lists of committees and their purposes. (Students might add to this list and sign up for such committees as book, bulletin board, etc.)

d. Evaluation criteria. (Students will want to know the basis for grading. Various forms that will be used for evaluating group work and individual growth can be included.)

When working out plans for the team operations, a balance of large, small, and individual activity should be considered. The percentage of time devoted to each will vary with the subject. Also, ways should be devised to permit students to participate in planning. A calendar of class activities can be made up and students given a copy to keep them informed. The calendar can be a part of the study guide.

4. Other Operational Procedures

The variety and wide range of team combinations make it difficult to outline precisely methods of operation that could be used successfully in all teams. However, certain duties and responsibilities are necessary to the smooth running of all team classes:

a. Student Orientation

Like the teachers, students need a proper introduction to the team situation. A carefully worked out explanation can be presented to the class in a large group session. Teachers and aides should be introduced as co-workers bringing the instructional program to them in a *new* way. A summary of how the needs of the students will be met through various groupings should be given. In many ways this introduction will be similar to that given in a conventional class in regard to the subject content, the goals and objectives, general classroom procedures, and student leadership responsibilities. Students will need assurance that though the manner of approach and the number of people involved is different, they should expect to study and learn as well or better than in any other class. They should recognize and appreciate the fact that there are additional advantages for individual study and independent research, and that many group activities and resource persons will contribute greatly to their education.

b. Student Responsibilities

Although the team leader assigns most of the routine duties to the aides, there is no reason to remove from the students those responsibilities that they would have in any other class. Student monitors can help with the passing, collecting, and returning of papers, checking out books, putting up bulletin boards, operating audio-visual equipment, etc. Supervision of student monitors can be handled by the aides.

c. Correcting and Grading Papers

It is appropriate to assume that aides can easily correct objective tests. For this to be adequately done, all test keys and grading should be prepared and worked out by the teachers. In the main, teachers will want to have some contact with the students through the reading of their compositions, essays, and subjective tests. With special help and training, aides can participate in some of the subjective evaluation of tests, essays, and compositions.

d. Clerical and Housekeeping Duties

Aides take care of most of these duties. The original planning for how these duties are to be handled should be carefully gone over and definite responsibilities should be given to each aide. However, both aides should become familiar with all such responsibilities so that one could take over in case the other was absent or assigned to some particular project. Taking attendance, moving students from one group to another, issuing texts, recording grades, etc., should be carefully thought through and methodically carried out.

PRACTICAL CONSIDERATIONS IN LARGE GROUPS, SMALL GROUPS, AND INDEPENDENT STUDY SITUATIONS

By William Georgiades

LARGE GROUP INSTRUCTION

Large group instruction has within its structure many advantages, both real and potential. The advantages differ to some extent depending upon one's point of view, and it might be in order to point out these advantages as they appear to these viewers: the teacher, the administrator, and the student. All three groups have vital interests in quality education, and some of the more significant aspects of large group instruction for each group should be mentioned.

A. The Teacher's View: Large Group Instruction
   1. Enables the teacher to instruct once to ninety students material that formerly required three presentations to thirty;
   2. Permits teachers to spend more time in preparation by letting him leave the classroom while other teachers work with the large group;
   3. Allows teachers to plan instruction in such a way that more forceful, better presentations of subject matter are given;
   4. Breaks the present cellular structure of one classroom--thirty students--and lets the teacher grow professionally through contact with competent colleagues and fresh ideas.

B. The Administrator's View: Large Group Instruction
   1. Provides the vehicle for instruction better than (or at least as good as) previous, conventional programs;
   2. Gives in-service training to new, inexperienced personnel;
   3. Places the superior teacher before a larger group of students than under the present structure;
   4. Utilizes new audio-visual techniques to best advantage;
   5. Fosters professional growth through the interchange of ideas and techniques.

C. The Pupil's View: Large Group Instruction
   1. Provides high quality teaching that is both profitable and interesting;
   2. Fosters independent attitudes and maturity;
   3. Furnishes the opportunity for meaningful self-instruction.

Teaching personnel engaged in large group instruction have accumulated some knowledge of the type of instruction and the techniques most applicable for large group teaching. In some senses these techniques and types are no different from those which have characterized any good teaching practice; there is, perhaps, a matter of emphasis on a particular point. At any event, some of the following techniques and viewpoints have seemed especially important:

1. Institute adequate student orientation as to large class procedures.

Detailed (and, preferably, mimeographed) instructions concerning vital aspects of class procedures will eliminate many future problems. The more thorough and systematic the orientation is, the less likelihood there will be of misunderstandings.

2. Develop systematic procedures for beginning classes promptly.

"Business" matters such as roll-taking, signing admittance cards, and distributing or collecting materials must be done rapidly. Permanent seating arrangements, written assignment sheets, student secretaries and various set routines help immeasureably in that vital moment after the bell rings and the class begins to settle down. An understanding by class members that no personal question can be asked as the teacher does these "business" matters is vital.

3. Capitalize on the formality inherent in large group situations.

Large numbers of students (60-150) generally minimize rather than magnify the normal discipline problems found in a class of thirty. Group self-discipline is a remarkable phenomenon in larger groups which operates constantly if the instructor is prompt and efficient. This sense of formality by the group should be retained.

4. Discourage normal classroom interruptions which, since they are tripled and quadrupled in large student groups, destroy classroom effectiveness and concentration. Requests for cooperation are effective, and stationing responsible students near the doors where they may intercept messengers may aid in preserving classroom lecture control.

5. Avoid the long lecture which goes beyond normal attention span.

Large group instruction is rarely personalized to such an extent that attention span is lengthened. Short lecture periods (fifteen-twenty minutes) are best, and a change of scene should follow. This change of scene can be another speaker, a different activity, or a contrasting teaching technique (i.e.--a film); the change must occur if the lecture situation is to remain effective.

6. Furnish the students with opportunities for individual discussion which cannot be permitted in the large group.

Since discussion time is limited, the teacher must curtail comments and explanation; the result can be poor if no opportunity for clarifying is given.

7. Discourage visitors, at least with new programs and with inexperienced teachers.

Many teachers participating within a newly-formed team are at first insecure when their colleagues listen to their lectures, and it is wise to let neophytes work alone at first.

8. Avoid set routines as to the method of instruction. Day-to-day variations in the use of time are profitable, and using two or three instructors within a given period (for example, one teacher giving a spelling test in the first twenty minutes, another teacher explaining an assignment for fifteen minutes, and the third team member finishing the period in another manner) is nearly sure-fire in terms of student interest.

9. Permit team members autonomy over the large group within given academic areas. For example, one team member should "do" lecture, test and grade--the play unit; the next team member should do the spelling unit; a third, another unit, etc. There is then no clash over grading standards, over particular emphases, over the minutiae of specific detail.

Large group instruction possesses many advantages, but it can impose hardships on teachers as well as a poor learning situation under certain conditions. Large group experience has made clear these pitfalls:

1. Hasty assembling of teams without proper planning and without unsolicited volunteering by teachers is a cardinal error.

2. Team members must be congenial: a year is a long time and the normal pressures of teaching cause friction which must be dealt with.

3. Facilities must be adequate. Poor seating arrangements cripple needed notetaking; inadequate acoustics and/or lack of a loud speaker system strain the lecturers' voices and cause needless fatigue; poor room ventilation contributes enormously to restlessness, especially in the latter moments of the period; and lack of needed materials (books, supplies) handicaps programs. Teachers, too, need better facilities for working; a "free" hour spent in the teachers' lounge is generally non-productive, and many times there is no adequate place for paper correction, student consultation, or such duties.

4. Teachers involved in the teams generally work harder than those not on teams, at least in the initiatory stages. Large group instruction requires detailed planning and research by team members, a practice normally not followed. Teachers must use their time advantageously.

5. Teachers normally must learn how to use the assistance given them (student aides, clerical help) profitably; they must learn to use these people efficiently.

6. Better student grouping is needed. The content of large group instruction is of course somewhat dependent upon the ability ranges of the large group, the "tyranny of the middle" principle is perhaps more evident in large group work than in small and a homogeneous grouping of students is very much desire. A "mixed" group of ninety students does not contain the conventional "handful" of

capable, interested students as well as malcontented, uninterested people; it contains a sizable number of both groups, and they must be dealt with in such a way that their feelings do not influence the entire group.

7. The formal atmosphere of large group instruction precludes student discussion; many questions are unanswered and areas of non-agreement exist. Opportunity must be provided for small, discussion type meetings, or a rather tiresome lecture method of teaching will supplant the conventional method--hardly a victory for quality teaching.

To sum up, then, it is very clear that large group teaching instruction offers no panacea. It does have within its structure the possibilities for excellent teaching, provided that much care and planning accompany the installation of teacher teams. It is neither a time nor money saver, and safeguards are needed to keep this type of instruction as beneficial as conventional instruction.

On the other hand, however, there are within the machinery the grand possibilities of doing competent, careful teaching of a type rarely done today; the large group situation "demands" a polished performance by the instructor, and the accompanying gratification of this task well done is clearly worth the present inconveniences in transitional attempts with large group instruction. Teachers feel they are "really teaching," and this is a belief to be cherished and nurtured.

SMALL GROUP DISCUSSION

How does small group instruction differ from that of the more usual groups of thirty to thirty-five students? In the framework of large group, small group, and independent study combinations, techniques are quite different because factual presentations will be handled through large groups and individual application will be handled through independent study. The small group, then, tests and refines learning and eliminates misunderstandings by means of guided discussion and exploration.

A teacher may get students ready for a large group presentation by exploring their present knowledge of and needs for the subject matter, and by helping them to know what to look for; or he may follow up a presentation by reviewing subject matter with them and reinforce learning by considering applications.

Student participation appears to be the keynote of small group instruction. Yet how do teachers and students move into this new relation? Some teachers find that they can instruct very well in the formal setting but feel ill at ease in the more permissive one; too, they are reluctant to pass greater responsibility to students. Following are some suggestions and observations about small group teaching.

Small group meetings must have as much purpose to them as any other kind of instruction. The teacher should know exactly what he wants to accomplish, despite the less formal atmosphere of the classroom. In many cases he will try to elicit rather than to tell; his students should participate rather than merely receive. But at the end of the class period he will have guided his group to where he wants them to go. He should have material for summation and material for review at the beginning of the next class meeting.

In abandoning the format of "telling" students, the teacher of small groups allows the students to interact among themselves. Students should speak to and for the group and should be heard by all. The old business of having a student say something to the teacher which the teacher then relays back to the group as if he were a public address system is outmoded. With no translator handy, the speaker usually sharpens up his communication both in content and volume, and the listener sharpens his reception because there will be no playback. With only limited assistance, most students are able to clarify their ideas, particularly when the pressure to do so comes from the group. Rearrangement of chairs so that not all face the front of the room assists in this interplay, and teacher will do well to come out from behind the bulwark of his desk.

In small groups a teacher may facilitate discussion by first reviewing parts from earlier presentations or discussions. Posing some quick questions to which most students know the answer gives a sense of security at the outset, while putting someone on the spot merely results in embarrassment for all and opens a gap between students and teacher.

As students move into less familiar areas, they should be encouraged to guess at answers, with the understanding that these *are* new areas. No blame should attach to wrong answers and often the teacher can detect and use to good advantage the chain of association which sets off the wrong answer. Partially correct answers can be followed up to a correct conclusion through skillful questioning. Correct answers may be analyzed or otherwise reinforced. Correct answers should be regarded as an achievement of the group without too much emphasis on right or wrong for individuals. Where no one ventures, teachers may provide additional clues or steps in reasoning. Students in small groups, once they feel secure, seem to enjoy question-and-answer interplay and to remember well the correct conclusions.

Small groups tend to open up when discussion begins with an issue of interest or importance to young people. A chance to air views on currect school problems or policies, or on particular news events of world, national, or strictly local application, etc., brings good results. Often the students who enter a classroom are bursting with opinions about one thing or another. Given a chance to express themselves, they then settle down to the business at hand. The unwary teacher, of course, may never get to the business at hand; he has to guard against the skillful assault on his lesson plan. But a few minutes warm-up on the other affairs may bring his students to his subject matter in a much more receptive frame of mind and much more ready to contribute their thinking.

Discussion is by no means the only instrument of small group instruction. In some cases a teacher may wish simply to give further illustration and application of parts covered, using his special knowledge of his group. As he gets to know his group, he may ask one student to give a summary of material, or two to present the pro's and con's of an issue, or a panel to give a planned or impromptu presentation. The whole group may develop an outline or a piece of material or a list of areas for further study. Notes may be gone over to see what has been gathered and what missed in a presentation. A possible newspaper or documentary TV account of an event or trend of events may be developed, or half the class may do one and the other half the other for a comparison of media. Committees within the group may explore and report on community or library resources on a topic. Half the class may prepare a test for the other half, while the downtrodden study for it; next time the testers become the victims. Role-playing, planned dramatizations, man-in-the-street interviews--all become possible once rapport has been established within the small group.

Fun and games, merely? Not if there is purpose to every activity, the purpose of testing accuracy of learning, applying learning, or seeking out new direction for learning. Possible in regular classrooms? Of course, and often done. But unwieldiness of the larger group too many times defeats the teacher: the rebel knows there's another rebel; the shy one knows there's another who can't quite make it; the unprepared are sure there are others who are unprepared; the zealous begin to feel that their zeal is a little ridiculous--and teacher goes back to routine. In smaller groups, embarrassment diminishes, responsibility is more fixed, and fuller participation becomes possible.

As group rapport develops, controls tend to come less from the teacher, more from the group itself. Students who get by with petty annoyances in larger groups find themselves less able to do so in smaller groups, for sources of disturbance are more evident and classmates more ready to curb them. A certain pride develops in groups which are functioning well.

Disturbers to begin with are usually those who seek a particular kind of status or recognition as not caring for adult approval. Often they are low in self-esteem; it takes very few rebuffs to undermine the adolescent ego. But teachers of small groups have an opportunity to develop some sense of worth in each student. In the earliest group meetings it must be established that disagreement with ideas is permissable but that personal attack or criticism is not; and the teacher himself must adhere to this principle. Disturbance should be regarded as disruptive not to the teacher but to the group. The teacher's status is less threatened in a class of fewer students, and usually a mild reproof or postponement of reproof until after class will handle derelictions. Meanwhile the work of placing value on all contributions goes forward, with opportunity made for everyone to achieve something successfully.

Another cause of student disturbance is boredom. Here the teacher's sense of timing and his obligation to keep the work moving forward enter the picture. For the most part, small groups meet for only a half hour; a desirable aspect of flexible scheduling is its change of pace. Even so, the teacher must control his group's direction. Sometimes discussion heads up a blind alley or becomes tangential. Sometimes one student turns discussion into a filibuster, or two into a debate. Sometimes all climb into a merry-go-round. If a teacher has planned what he is to cover and if he foresees eventualities in terms of subject matter and group, he will lose neither the good student nor the poor one via the detour into boredom.

Small groups, then, can enhance learning by increasing student participation and student responsibility if the teacher accepts the changed nature of his group.

INDEPENDENT STUDY

There is great unanimity of opinion that major emphasis must be placed on student development in independent study. Critics or acclaimers of the schools speak with one voice as to the need to master independent study. The voice urges more student self-reliance, more pioneering spirit by the student scholar. Major discussion arises, however, as to what independent study actually is. To one sizable group, independent study means the student's doing what he is told to do without supervision; to another, it means the student's selecting profitable avenues of knowledge and inquiry with little direction other than his individual interest; another group prefers a middle direction between these two positions.

Translating these opinions concerning independent study into action soon points out dangerous areas: Group I believers, at their worst, simply assign more homework, believing this to be independent study; Group II believers may permit and foster endless time-wasting, placing errant speculation on too high a pedestal; and Group III adherents often search for ideal goals for all students, forgetting the individual maturation processes.

Nevertheless, it seems clear to all that independent study must involve the delegation and acceptance of responsibility to some degree by the student. The teachers' problem is to delegate these responsibilities in such a manner that free choice is not stifled, that the student emerges from the process not a parrot but a thinking individual. Basic to all teaching designs for fostering this attitude, moreover, is the concept that a student must learn by degrees--he cannot change irresponsibility overnight, and thoughtful recognition of this in furnishing the vehicles to facilitate this process is the best procedure for administrator and teacher.

Team teaching experience (as well as thoughtful teaching anywhere, whatever its structure) at the Centinela Valley Union High School District has shown these measures to be helpful in the fostering of student independence:

1. Replace daily assignment schedules with mimeographed weekly, quarterly, or (if possible) semester schedules.
2. Begin classes with orientation sessions which include grading scales, conduct expectancy, make-up schedules and penalties for incomplete work. If these policies can be placed in written form to accompany the assignment schedules, they can serve as excellent steps towards student independence.
3. Re-structure library usage in such a way that students can use it more advantageously: let the librarian give an orientation concerning its resources, the materials needed for independent study and make the library available all day (8:00-5:00) for students.
4. Increase the number of assignments requiring more than textbook sources of information. Insist on sources other than encyclopedias for upper level work.
5. Furnish assignments which permit studies in depth, rather than survey-type assignments which scratch the surface.
6. Allow, as much as possible, students--options within assignments (i.e.--he chooses term paper topic, his book report, his topic for composition, etc.)
7. Institute plans which reward self-direction. Permanent hall passes are an example of this. Permission to audit particular classes may be awarded.
8. Provide laboratory facilities where students can work with little or no supervision. Language and reading laboratories are good examples of this type of permissive activity.
9. Give students leadership opportunities whenever it can be done whether as student group leaders, chairmen of groups, various club officials, leaders of underclassmen, etc.
10. Make official recognition to the student body of those pupils who have been awarded some type of independent status--perhaps as school service club member, etc.

PREPARATION OF THE PROFESSIONAL STAFF FOR UTILIZING THE PONTOON TRANSITIONAL DESIGN

By Donald C. Clark
Sally N. Clark

INTRODUCTION

One of the great challenges facing educators today is that of building educational programs that are relevant in a rapidly changing technological society. This challenge is one that cannot be met by the traditional approach of adding more courses to an already overloaded curriculum. Significant new approaches must be developed to facilitate the learning process.

The successful development and implementation of new curricula requires a positive attitude toward change on the part of all those involved in the program. New programs require teachers and administrators to assume new and different roles. In addition, implementation of new programs requires that new teaching skills be learned and effectively utilized. It can be stated, therefore, that without the proper preparation of teachers and administrators, any innovative program is relegated to failure before it gets under way.

As noted in the title, the purpose of this paper is to examine some techniques and procedures which can be used in preparing professional staff members for the successful Transitional Design. The following is a brief review of the basic elements of the Pontoon Transitional Design.

THE PONTOON TRANSITIONAL DESIGN

The Pontoon Transitional Design can be best described as a method for making the transition from mass education to individualized instruction. It facilitates team teaching, flexible scheduling, and the correlation of subject matter. It also provides for assembly groups, discussion groups and individual study.

Dr. William Georgiades, in a publication entitled "The Pontoon Transitional Design for Curriculum Change," makes the following statement:

> A pontoon may be considered as a higher form of team teaching. Team teaching requires large group presentations, small discussion groups and individual study. The pontoon concept incorporates all of these plus the inter-relationship of various disciplines in a flexible block of time. In many cases, various subjects can be correlated readily and thus help in bringing about a better understanding of both subjects.

He goes on to say:

> The pontoon concept is identified as interrelating two or more subjects under the leadership of teachers

from different disciplines in a block of time in which each would ordinarily operate independently.

It should also be recognized that there are some subjects that do not easily correlate. In these instances the pontoon arrangement can still be utilized effectively because of its provision for time flexibility and size of learning groups.

A STRATEGY FOR PREPARATION

An in-service program for teachers and administrators needs to be carefully developed. Those charged with planning the in-service program must have a deep understanding of human nature in the process of change. They must also have a thorough knowledge of pontooning and each of the skills required by teachers and administrators for its successful operation.

Basically, then, a strategy for in-service training for pontooning should include the following elements or phases:

Phase I Establishing a Climate for Change
  a. Organizing leadership
  b. Providing information about pontooning
  c. Motivating the faculty
  d. Identifying personnel and securing a commitment
Phase II Preparing for Change
Phase III Implementation of Change
Phase IV Evaluation

It is important to remember that true change comes about slowly. With this in mind, it is also interesting to note that one of the outstanding features of the pontoon transitional design is its ability to offer flexibility to a small group of teachers without requiring massive change in the structure of the entire school. When properly planned, this feature allows a school to take a general and systematic approach toward desired curricular change.

ESTABLISHING A CLIMATE FOR CHANGE

Phase I, as the subheading indicates, deals with establishing a suitable climate for change. More specifically, this task involves building a leadership team, exposing teachers to the advantages of "pontooning," selecting personnel who might be interested, and final identification of "volunteer" teacher participants.

The establishment of a leadership team is vital if a systematic and comprehensive program of in-service is to be developed. One of the most important tasks of the team is to secure the services of a competent outside consultant who, upon selection becomes a member of the team. In selecting a consultant the following considerations should be made:

1. Does his philosophy of education fundamentally agree with that held by the district?

2. Does he have the ability to inspire and motivate teachers, administrators, school board members, and parents?
3. Is he approachable?
4. What successful experiences does he have in other districts which have attempted to establish similar programs?
5. Is he willing to get involved personally in the program and make a long-term commitment to the district (one to two years)?

The consultant assumes many different roles in the implementation of the "pontoon" program. Some of these roles are:

1. As an advisor to the leadership team, to teachers, and to board members
2. As a motivator of teachers and administrators
3. As a listener who can provide assistance in a non-threatening manner
4. As a reinforcer while teachers and administrators work with new curricular ideas

Serving on the leadership team with the consultant should be a representative from the district office and the principal of the school. Other key personnel and central office personnel may be included.

This group must provide dynamic leadership for the organization and operation of the in-service program and is responsible for the actual implementation of the pontoon program. In its initial planning the leadership team must make the following decisions:

1. The number of pontoons to be in operation for the following school year
2. The strategy for motivating interest for participation in such a program
3. The extent of in-service prior to the beginning of the program.

Once these three decisions have been made, the leadership team can begin to plan its strategy for motivation. Within each school there are certain specific teachers around whom most innovative curricular programs can be built. These are the teachers who, for the most part, are highly skilled in their specific subject areas but are constantly in search of better instructional methods. They tend to be secure in their jobs and willing to try new ideas. These are the teachers who, when identified, should become the initial participants of the pontoon program.

One of the cardinal principles in the early stages of developing an innovative program is that no one participates in the program unless they have volunteered to do so. The utilization of volunteers insures a commitment on the part of these teachers to spend the time necessary in planning and in the implementation of programs. It is also our feeling that there is no faster way to sabotage a program than to involve people who basically do not want to be involved.

The strategy utilized to gain this commitment to pontooning can be broken down into three stages. Stage I involves getting information to teachers about pontooning. Included in this stage are:

1. Discussion about pontooning
2. Extensive reading about team teaching and pontooning
3. Effective utilization of films and filmstrips
4. Visitations to schools now using pontooning

We have found the use of the NASSP film "Answers and Questions" to be quite successful in motivating teachers to question current educational practices. The NASSP filmstrips "Focus on Change" and "Focus on the Individual" can also be used effectively. Other materials useful at this stage are articles by Dr. William Georgiades at the University of Southern California, including "The Pontoon Transitional Design for Curriculum Change" and "Ways in Which Teams May Function."

Stage II is motivation. While closely correlated with Stage I, the motivation aspect of this procedure calls for an emotional appeal to teachers to participate. We have found that this is best done by a presentation to the school faculty as a whole. By this time most of the teachers will have had at least some exposure to the materials relative to pontooning and team teaching. Usually the consultant, hired by the leadership team, is responsible for the presentation to the faculty. His presentation challenges teachers to look at their current procedures and instructional methods and asks them to evaluate them carefully in terms of learning. He then asks those who are interested in trying a new approach, such as pontooning, to contact any of the members of the leadership team within a week's time.

Stage III is identification and commitment. If the motivational meeting has been effective, the leadership team should have little difficulty in getting the volunteers to initiate a pontooning program for the following year. The leadership team must meet and consider each volunteer carefully, as all volunteers may not possess the qualifications necessary for initiating the program. If the project is to be successful, it must be built carefully around people who have initiative, good judgment, and dedication.

PREPARATION FOR CHANGE

Following final identification of participating teachers, the leadership team must develop a careful, systematic program of in-service. Much in the same way that teachers identify and establish behavioral objectives for their courses of study, the leadership team should establish certain behavioral objectives for the in-service program. The leadership team has to consider the amount of time available for teacher in-service and then establish a hierarchy of important objectives that will be accomplished in that time. It is better to cover a few objectives thoroughly than to try to build an all-encompassing program.

For teachers new to pontooning, there are probably at least five important objectives that need to be accomplished before the implementation of the program in the fall. These include:

1. The development of skill in the scheduling of time, as demonstrated by the preparation of schedules that will be utilized during the first two weeks of school
2. The preparation of behavioral objectives suitable for the subject matter they will be teaching
3. The preparation of a list of procedures for the productive utilization of teacher aides
4. The development of procedures that will facilitate maximum utilization of existing physical facilities
5. The preparation of a program of evaluation that will reflect the accomplishment of behavioral goals both in the cognitive and affective domains.

Past experience has shown us that it is important to give the identified teachers as much exposure to pontooning as possible. This can best be done through visitations in the spring to schools that are currently achieving success with the Pontoon Transitional Design. In addition to the teachers, these visitations should include the principal, the counselors, and persons responsible for the scheduling of classes at the school. A member or members of the Board of Education may well be included.

A good visitation experience would include the following:

1. An opportunity to meet with the administrative staff of the school and get a general overview of the pontooning
2. An opportunity to visit the classrooms and see the program in operation
3. An opportunity for the teachers to meet informally with teachers who are currently pontooning.

We feel that this last point is probably the most important aspect of the visit.

In addition to the visits, the teachers should be exposed to a great variety of materials concerning the subjects of pontooning, team teaching, and individualized instruction. It is important that some of the materials used in the motivational stage be again brought out and reviewed. Some of these materials would include:

1. Materials developed by Dr. J. Lloyd Trump and the National Association of Secondary School Principals
2. Filmstrips and books on behavioral objectives, as developed by Dr. James Popham of UCLA and Dr. Robert Mager
3. Materials dealing with individualized instruction and the development of learning activity packages
4. Pamphlets and articles developed by Dr. William Georgiades and others on the subject of pontooning, and published by the Center for Excellence in Education, U.S.C.

Time should be scheduled periodically throughout the spring for informal meetings with consultants, administrators, and teachers for the discussion of the philosophy of pontooning and the techniques necessary for its implementation. These meetings should be scheduled following the visitations and may include presentations of appropriate films and filmstrips. We have also found it very successful to make several of these meetings dinner meetings. This insures a certain degree of informality and tends to facilitate better communication.

Having worked with teachers, administrators and counselors all spring, the professional staff is now ready for the intensified summer in-service program. During the summer workshops we strongly recommend that, whenever possible, teachers be paid for their participation. In Monrovia, for example, teachers are paid the base hourly rate that they would be receiving if they were to teach summer school. It is also recommended that whenever possible the teacher aides who will be working with each team be identified and employed to work with and for the teachers during the summer in-service. This helps to establish strong ties within the team and expedites cooperative effort among all members.

The summer workshop may be divided into several stages. The first stage would be an intensive period of 30 to 40 hours spread out over one or two weeks' time. During this time the leadership team through the use of films and materials, consultants, and teachers and administrators from other districts attempts to help each of the teams achieve the behavioral goals listed previously. There are few formal presentations during this time. The consultants will work individually with each of the teams as they attempt to achieve their various objectives. Teachers are given a great deal of freedom to work within their groups. It should be emphasized, however, that at the end of this time the teachers should be expected to accomplish very specific goals. This might include, in line with the behavioral objectives established previously, developing a list of objectives for each course with sample schedules and evaluation plans. During the last day of this intensive program, each of the teams is responsible for a presentation of its materials to the rest of the group. At the end of each presentation, the merits of the materials developed are discussed and evaluated by the entire group. Specific recommendations are then made for revision.

At least two or three additional afternoon or evening meetings need to be held during the course of the summer. The primary purpose of these meetings is to check the progress of the teachers and their planning, to answer questions, and to reinforce them if they are discouraged about any aspect of the program. Just before the beginning of school in the fall, a final meeting must be held. At this meeting each team reports to the rest of the teams on what its members expect to accomplish in the first two to four weeks of pontooning. This report should include the following:

1. Sample scheduling and grouping procedures
2. Expected behavioral outcomes for the students
3. A description of the evaluation plan and plans for initiating it
4. Ways they will be utilizing the services of teacher aides
5. Plans for using existing facilities.

This meeting offers the members of the teams a final opportunity to express their feelings (positive or negative) before the actual implementation of the program.

IMPLEMENTATION OF CHANGE

It could be accurately said that Phase III represents the "from theory to practice phase." It is now that teachers have the opportunity to place in operation all of the ideas and techniques they have been developing throughout the course of the in-service program. The leadership team now assumes a new and different role. It is basically one of reinforcement and support for the teachers as they launch out into new and unexplored areas of the curriculum. Members of the leadership team must be readily available to consult with teachers about the various problems they encounter. Without frequent support during the early months, the program may flounder to a point where it cannot be salvaged. Often, all the teachers need is a word of encouragement or a sympathetic ear.

During this period of implementation renewed emphasis must be placed on the development of the skills needed by teachers for making effective large group presentations and for leading small group discussion. The most valuable assistance can be given in the development of these skills as the teachers actually start working with varying group sizes. Teachers may also desire assistance in the participation of special materials that will make their presentations more meaningful.

The effective utilization of the teacher aide can be one of the determiners of a successful program. We feel that the members of the teaching team should be made responsible for the final choice of the aide who will work with them. If it is not possible to hire the aide prior to the in-service sessions, time may be allotted during the summer in-service program to interview and select an aide for each team. As the teachers and the aides gain experience working with each other during the first semester the teachers begin to see the aide in a greatly expanded role. Guidance must be given in how to effectively use the aide and involve her as a vital part of the instructional program.

During the implementation stage in-service should be continued on a regular basis. Teachers need the opportunity to meet frequently with the consultant in order to discuss and evaluate their current progress. They also should again be provided with the opportunity to visit some of the schools that are achieving success with pontooning. This will tend to reinforce their effort and give them new [illegible] about scheduling, use of facilities, and utilization of teacher aides.

EVALUATION OF THE PONTOON PROGRAM

The importance of establishing proper procedures for evaluation cannot be overemphasized. Without evaluation it is impossible to determine the accomplishments or failures of pontooning programs. Evaluation is an integral part of each phase of the program. In the early phases of identification and commitment the leadership team must establish procedures to determine whether or not their goals have been met. They must also evaluate the spring and summer programs to determine whether the procedures established for the training of teachers have been successful in getting teachers ready to begin pontooning programs. Teachers, during their summer in-service sessions, must develop the behavioral objectives that will serve as the criteria for determining the success of their programs. During the summer they will also determine the particular time schedule that will be in operation for the pre-testing and the post-testing of students. Finally, during the actual implementation of the program, careful steps and procedures must be developed and followed to assure that the data obtained will be reliable and valid for the overall evaluation.

SUMMARY

Successful program utilizing the Pontoon Transitional Design must provide the necessary training for its teacher participants. This training must be continuous and it must be supportive, but most of all it must provide the teachers with the new skills they need to develop a successful pontoon program.

Preparation for pontooning must be carefully developed to provide a gruadual introduction to the basic concepts involved in its design. It must not move so swiftly as to threaten the security or limit the understanding of those participating. The in-service program, to be most effective, must not make the same mistake inherent in many current educational practices. It must not assume that time spent being exposed to ideas is the same as learning. An effective pontoon in-service program must provide the opportunity for personal involvement in the development of new understandings designed to foster effective learning. Without individual involvement and commitment, a truly successful program can never be achieved.

APPENDIX

Criteria for Successful Pontooning

1. Support from Board of Education
2. Support from Central Office Administration
3. Support from school administration (principal and assistant principals)
4. Interested teachers (volunteers)
5. In-service program and consultant support
6. Auxiliary support (teacher aides)

Time Schedule for In-service when Program is to be Implemented in September

October, November, December . . .	Organization of Leadership Team Identification of Team Members Selection of Consultants
January, February, March.	Information, Motivation, Identification and commitment
April, May, June.	Visitations, Information sessions, Discussions
July, August.	Intensive summer in-service
September-June (school year). . .	Implementation of Program, Consultant visit, Reinforcement sessions, School visitations, Utilizing teacher aides, Curriculum, Evaluation

Who Should Be Involved in the In-Service Program?

1. Teachers
2. Principals - Assistant Principals
3. Aides
4. Central Office Administration
    - Curriculum Director
    - Assistant Superintendent
5. Board Members

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AN EFFECTIVE INSTRUCTIONAL AIDE PROGRAM: TRAINING FOR BOTH TEACHERS AND AIDES

By Donald C. Clark
Sally N. Clark

Over the past several decades many attempts have been made to increase the effectiveness of the classroom teacher. Technologists have developed new types of equipment and instructional media. Psychologists have developed programmed instruction and new theories of learning, and educators have developed new methodologies and techniques. When properly used, all of these new developments have added greatly to teacher effectiveness. It is, however, our opinion that one of the most promising ways to increase the effectiveness and efficiency of a classroom teacher is the employment of instructional aides.

RATIONALE OF INSTRUCTIONAL AIDE PROGRAMS

Before discussing the training of aides and teachers, it is important to briefly examine the rationale for instructional aide programs. If we are to believe the statement by Dr. J. Lloyd Trump when he says, "one-third of the teaching day goes to clerical and subprofessional tasks and another third to work that could just as well be done by various kinds of automatic devices," it is imperative for us to then examine ways to better utilize the competency of a professional teacher. Improvement of instruction is a major professional goal, and a teacher aide can help achieve that goal. It could therefore be said that the real rationale for the instructional aide program is to assist teachers in the supervision and instruction of pupils so that teachers may use their energies more effectively. Dr. Wallace Maurer, Chief of the Bureau of Teacher Education, Pennsylvania's Department of Public Instruction, makes the following statement:

> The use of paraprofessionals, provides more opportunity for personal attention to the learner and it frees professionals from non-teaching assignments so as to provide them with more time to wisely engineer learning climates.

He goes on to say:

> While economy, through cost control, is a prime

Clark, Donald C., and Sally N. Clark. "An Effective Instructional Aide Program: Training for Both Teachers and Aides." Journal of Secondary Education, Vol. 45, No. 6, 1970, pp. 250-255.

> objective, the financing of paraprofessional staffing needs to be viewed in its relationship to the increased efficiency and effectiveness of the professional teacher.

In the past several years the teachers themselves have recognized the need for assistance in nonprofessional activities. Consequently, the profession has taken a positive stand toward the employment of instructional aides. The following statement by the National Commission on Teacher Education and Professional Standards appears in a brochure entitled Auxiliary School Personnel. The statement is as follows:

> The National Commission on Teacher Education and Professional Standards sees the addition of auxiliary personnel in the schools as one of the most challenging and hopeful advances in modern education. The needs of society require significant changes in our present school organization. The teacher is a skilled professional and as such must be permitted to do a professional level of work. He must be a diagnostician and a guider of learning experiences. He should not waste his time on trivia. The utilization of auxiliary personnel can provide the opportunity for teachers to teach.

ORIENTATION AND TRAINING PROCEDURES FOR TEACHERS

All those in the process of developing instructional aide programs should carefully consider the following statement made by Professor J. L. Stevens of the University of Houston:

> If you get teacher aides, don't expect your teachers to know automatically how to use them. They'll need training. In fact, it takes almost as much training for the teacher as for the aide.

It is important to realize that the utilization of an aide is something entirely new to most teachers; and if the program is to be successful, teachers need to be properly prepared to effectively use the services of an aide.

In some cases teacher attitudes toward aides have been mixed. Some teachers have resisted the presence of another person in the classroom while they are teaching. These teachers may perceive an aide as infringing upon their professional autonomy in the classroom. Since many teachers hold the perception that the classroom is their bailiwick where they may give the aide chiefly menial tasks such as housekeeping and monitoring. The aide is not allowed to give any vital assistance to the instructional program. There are, however, many teachers who view the aide as a source of help and are willing to utilize the aide's talents for the benefit of the children. It is these teachers who view the aide movement as having great benefits for the professional teacher.

An inservice program for teachers should begin prior to employment of the aide and should continue after the program is in operation. We recommend that teachers participate in the selection of their aides, and at this point it is our recommendation that before the selection procedures begin that some time be spent in discussing the proper utilization of aides. Our past experience has shown us that a couple of two- or three-hour sessions with an outside consultant and with school administrators are effective in assisting teachers to properly use aides.

The activities that are covered in these sessions include:

1. Defining and listing those responsibilities that are of a professional nature and must be handled by the teacher.
2. Defining and listing the duties and responsibilities of the aides.
3. Discussion of methods of handling personality conflicts between aides and teachers and aides and students.
4. Discussion of appropriate interviewing techniques to be utilized in selection procedures.
5. Appropriate methods of evaluating the instructional aide's effectiveness.
6. An equitable distribution of the aide's time.

There must be a feeling of mutual respect between the aide and the teacher. The aide must feel that she is playing a vital role in the instructional program. It is important that all members of the staff have an opportunity to develop individuality in areas that are beneficial to both the students and the other members of the staff. This can be done by utilizing the particular talents that an aide may have. In doing this teachers need to acquire the ability to recognize these talents and to utilize them effectively. Above all, the aide's work should be treated with respect so that she will have a sense of dignity and accomplishment.

In working with aides, teachers must learn to develop appropriate relationships. If this is not done, the working relationships may be strained. Inappropriate teacher-aide relationships are most often manifested by the teacher either denying or overstressing the differences in their respective roles.

Finally, teachers need to be aware of some of the important aspects for job success in an aide program. The University of Minnesota Office of New Careers suggests the following four elements:

1. A clear-cut hierarchy of authority.
2. A variety of tasks for aides to do with a certain amount of independence.
3. A chance to feel part of the agency.
4. Meaningful inservice training.

Teachers play an important role, and their continued efforts in these areas contribute greatly to the success of the aide program. Meaningful inservice becomes a cooperative effort of teachers, principals, and central office consultants and administrators.

ORIENTATION AND TRAINING OF INSTRUCTIONAL AIDES

If the aide is going to be effective in assisting the teacher, her responsibilities and role must be carefully defined. It has been previously stated that one of the things teachers need to do in preparing for effective utilization of aides is to carefully delineate those responsibilities that are professional in nature and those responsibilities that can be adequately handled by an instructional aide. If teachers cannot do this, there will be a certain degree of fuzziness that will somewhat hamper the effectiveness of the aide. A teacher who is to successfully work with an aide in an educational setting must have had incorporated in her own training the ability to work as a leader or part of a team.

While it is impossible to develop a universal list of the duties of instructional aides, there are some essential conditions that govern the assignments that are typically given to auxiliary personnel.

1. There must be specific training for and evidence of competence for each assignment to be performed.
2. The supervising teacher should provide directions as to when and for whom each function is to be performed.
3. All duties and functions performed by auxiliary personnel shall be supervised by a certificated teacher. The constant physical presence of the supervising teacher is not essential, but the teacher must always be readily available.

Once the duties and responsibilities of the aides have been carefully delineated, it is necessary that preservice and inservice training be developed so that these people have a minimum degree of skill and understanding before they enter the classroom. There are many effective ways for training instructional aide personnel. Many junior colleges in California have, or are now in the process of developing, two-year courses of study that have the designated purpose of preparing people for instructional aide positions. These programs typically include: general education courses such as psychology, social science, English, skills courses such as typing and office practice; and specific courses dealing with school procedures, policies, and duties and responsibilities of aides. Adult Education courses have also been developed to give interested people an opportunity to acquire some of the skills and understandings necessary for effective performance as an instructional aide. These courses vary and may be eight weeks, a semester, or a year in length. School districts, in many instances, have developed their own programs of inservice. Those selected as aides spend several weeks prior to the beginning of school in a preservice program and then continue to attend inservice sessions throughout the course of the year or as long as they are employed as instructional aides. Typically these programs are administered by building principals, consultants, and district curriculum personnel.

As mentioned previously, the format of inservice training varies throughout California and the nation. This can also be said of the content and methodology used in the training of aides. It should be said, however, that the content of the inservice training sessions should correlate directly with the duties and responsibilities that are expected of the aides. There are, however, some general kinds of information that should be incorporated in all instructional aide inservice programs. In the Croft Publication entitled The Teacher, Joseph C. DeVita lists the following factors that should be considered:

1. Your district's organization and philosophy.
2. District forms and procedures.
3. Suggestions for coping with classroom problems.
4. Grooming and personal discretion.
5. Suggestions for handling judgment situations.

In dealing with the training of instructional aides we have utilized two formats in the Monrovia Unified School District, both of which we feel have been successful. The first format was the adult education course which lasted for a duration of eight weeks. The course was planned and developed by curriculum resource people who also participated in the conducting of the weekly three-hour sessions.

The course description is as follows:

This course explores the role of the instructional aide in assisting the classroom teachers with those duties that are essentially nonteaching. Each participant will be given the opportunity to acquaint himself with the roles and duties of instructional aides, to create bulletin boards, to work with many different kinds of multi-media instructional equipment, and to prepare various materials used in the classroom.

Briefly the sessions were organized as follows:

Session 1

1. Biographical information about the participant.
2. Discussion of ideas and concepts regarding instructional aides.
3. Discussion of aide relationships to various school and district personnel.
4. Reading and discussion of articles on team teaching.

Session 2

1. Discussion of the history of the use of instructional aides.
2. Continued discussion of literature concerning instructional aides.
3. Discussion of rationale for the instructional aide program.
4. Discussion of reactions of the community, of teach-

ers, students, and parents to instructional aides.
5. Introduction to innovative educational programs and the place of instructional aides in the programs.
6. Discussion of personal qualities and traits important for instructional aides.

Session 3

1. Review use of various district and school forms, such as requisitions, registration forms, cum folders, etc.
2. Panel discussion of teachers and administrators concerning the use of instructional aides.

Session 4

1. Discussion of district job description.
2. Discussion and practical experience on the utilization of duplicating equipment including the ditto machine, mimeograph machine, and Xerox.
3. Setting up a list of step-by-step procedures to be used in the operation of each of these pieces of duplicating equipment.

Session 5

1. Development of a guide and a handbook that will be useful to instructional aides.
2. Overview of media and media equipment utilized in district classrooms.

Session 6

1. Lab session in the utilization of overhead projectors and photocopy machines.
2. Development of overhead transparencies.
3. Development of good bulletin boards.

Session 7

1. Laboratory experience in the set-up and utilization of video tape equipment, record players, tape recorders, 16mm projectors, and filmstrip projectors.

Session 8

1. Growth and development patterns of school age children.
2. Coping with classroom problems and situations.
3. Summary.

The other format that we have successfully used has been at the school building level. These meetings are usually conducted prior to school and directly involve the principals and the teachers in the training of aides. The content incorporated in this format is basically the same as the one developed for the adult education course.

After inservice training and general orientation have taken place, the aides should be given additional training and support throughout the school year. One of the best ways is through informal meetings and lunches where teachers, aides, and other supportive personnel can discuss various problems of mutual concern.

In summary, while there are many factors that contribute to a successful instructional aide program, too much emphasis cannot be placed on the careful and systematic training of both teachers and aides. As mentioned previously, this training should not only precede the implementation of the aide program but should continue to give support to teachers and aides in their efforts to cooperatively build a strong educational program.

Summary

All too often innovations are introduced into schools without due consideration to the particular roles teachers will be required to assume. It is perhaps for this very reason that many promising new programs fail or at least fail to live up to expectations. Another significant factor in the failure of innovations is the assumption that when teachers are presented new role expectations they automatically value them and adopt them into their teaching methodology.

In our work with team teaching, pontooning, the Model Schools Project, and other programs for individualizing instruction, we have attempted to deal with teacher methodology and inservice on a systematic basis. The results of our initial efforts are contained in four articles found in this section.

In summarizing the article the following significant concepts are reemphasized:

1. Innovation makes new demands on teachers and administrators. These demands should be identified prior to making a commitment to innovate.
2. Innovation usually meets resistance. It is therefore important that all those to be involved in a program participate in planning.
3. New programs should be phased in gradually and utilize only volunteers.
4. Inservice programs that will assist teachers in developing new skills and assuming new roles need to be systematically developed.
5. Training for teachers, aides, and other faculty and staff members must be continuous over a period of several years.

Finally, it must be stated that the various roles assumed by a teacher and the methodologies he uses are based primarily on attitudes, self-concept, and personality traits. In short, teaching is a very personal matter. Getting a teacher to change his role in the classroom therefore becomes a very complex task that requires a gradual and systematic program, opportunities for self-evaluation, and a supportive climate from peers and administrators.

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PART V

EVALUATING INNOVATIVE PROGRAMS

Introduction

Evaluation systems must become an integral part of every individualized instructional program. Without provision for continuous feedback, little can be done to determine program effectiveness, and no information is available to provide the basis for sound program changes.

This section attempts to examine evaluation as it applies to innovative programs. Dr. Georgiades, in the initial two articles, discusses the problems that arise when programs that emphasize new concepts of learning are evaluated by traditional evaluative procedures. In the following article Drs. Trump and Georgiades examine the various elements of school programs in the Model Schools Project and their relationship to change. In describing the evaluation of the Pontoon Transitional Design, Dr. Clark emphasizes the importance of continued research for updating innovative programs. Drs. Housden and LeGear conclude the final section of this book with a discussion of criterion-referenced evaluation.

Dr. Jack Housden has taught both mathematics and speech at the junior high school level. Presently he is employed by the California State Department of Education in Sacramento, California as an evaluator of educational programs. Dr. Lannie LeGear has served as a special education and English teacher at the high school and college levels. Presently she is an Assistant Professor of Special Education at Purdue University, Lafayette, Indiana.

TEAM TEACHING: A NEW STAR, NOT A METEOR

By William Georgiades

In my opinion, the past decade has shown that team teaching is a new star, not a meteor, in the constellation of educational innovations.

Team teaching and its related elements of nongradedness and flexible scheduling have the potential to help education solve its most pressing contemporary problems--rising enrollments, teacher shortage, and rapidly increasing knowledge. It can provide an environment in which all students' needs are more effectively met than in the conventional classroom; it can facilitate individualized instruction; and it can permit better use of teachers' talents and educational technology in passing on the vast amount of knowledge available today.

Any intelligent discussion of team teaching must begin by making clear what it actually is, for in visiting so-called team teaching programs around the country I have seen too many examples of what it is not--part-time practices, with teachers tacitly or openly agreeing, "Your turn today: mine tomorrow."

Team teaching typically includes the following essential characteristics: (a) Students are arranged in classes of 70 or more for oral and visual presentations and in groups of 12 to 20 for discussion. (b) Team members take assignments according to their competencies and determine the sequence and manner in which the material is to be presented and the structural arrangement (large group, small group, or individual study) most effective for a particular purpose.

In addition, a number of conditions are necessary to ensure that team teaching will be truly effective:

Cooperative planning. Teachers in a team will perform at their best only if they have time to plan, prepare, and evaluate what they are doing. This requires the redeployment of teacher time, redeployment of students, and different use of finances.

Use of paraprofessional aides. Instruction assistants and clerical aides are essential to a team operation. Clerical aides perform many of the routine nonteaching tasks, while instruction assistants help supervise independent study, handle instructional materials, and evaluate some student work.

Georgiades, William. "Team Teaching: A New Star, Not a Meteor." NEA Journal, Vol. 56, No. 4, April, 1967, pp. 14-15.

Material support. Large-group instruction usually calls for microphone systems and overhead projectors. Certain additional kinds of materials may also be needed for independent study.

Adequate preparation of teachers. This usually involves visiting ongoing team programs and attending summer workshops for planning. Research has shown the importance of these activities for successful team teaching.

A climate of administrative support. Research indicates that support from the administrator is vital to a school's success in team teaching. In no case was extensive, well-organized team teaching encountered in which the administrator was not enthusiastically involved. Conversely, few enthusiastic teachers were found in programs where the administration was neutral or busy with other things.

It is much too early to give an authoritative evaluation of team teaching. Although research and literature is gradually accumulating, glowing testimonials have dominated the published articles. Some of the better descriptive presentations of team teaching have appeared in the Bulletin of the National Association of Secondary School Principals. But these have been mainly confined to subjective discussions of the relative merits and limitations of various team designs.

Little effort has been made to measure some of the more significant targets of team teaching, such as increasing the student's critical thinking ability through small group study; developing his ability to discuss with others through small group experience; building his sense of responsibility for his own education through independent study; allowing the student to move at his own pace by giving him more individualized instruction.

I have included in a bibliography following this article studies of student achievement under team teaching representing a fair cross section of the country. One study found that students in the experimental group showed higher achievement in English III than did the team-taught students, while English II results favored the control group; another study found in favor of the experimental group on the teacher-made test and the Reading Comprehension test of the CRT; and the others found no significant difference in achievement between the control and experimental groups.

Serious doubts can be raised about most of these studies, however. Greatly improved student performance as measured by standardized achievement tests is not the most important objective of team teaching. Teaching basic methods of inquiry and cultivating a desire to learn are much more significant. The purpose of education is not to pile up a storehouse of information in each student's brain, but to give him the tools with which to think. Unfortunately, most current techniques of evaluation are designed to measure the piling-up process.

In view of the limitations of research studies currently available, we need comprehensive studies which will measure all the influential factors in the learning process, such as socioeconomic status, intellectual ability, sex, grade level, ethnic representation, and teacher behavior, as well as the interaction among these factors.

Further, I believe that complex, yet clearly formulated, theoretical models of team teaching should be developed, for, as Heathers has stated, "Designing a new team teaching plan is a process of devising a model that interrelates features of the plan, aspects of the instructional situations where it is to be employed, and anticipated outcomes of the plan." No final judgment should be made on team teaching until such comprehensive evaluations are carried out.

The pace at which the basic goals of team teaching are realized in American education will ultimately be determined by how quickly administrators and teachers can change their ways. According to one Gallup Poll, Americans strongly support a creative reorganization of the nation's educational structure. Unfortunately, we find the greatest resistance to change among educators, who are in the best position to bring it about. The strength of our society and the future role of this nation in the world will likely be determined by the ingenuity and daring of educators who explore new and better ways of teaching all the children of all the people. The choice is ours: to innovate or stagnate.

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EVALUATING NEW STRATEGIES IN TEACHING AND LEARNING

By William Georgiades

Let's stop bowing at the altar of cognitive achievement and start developing appropriate and multiple ways of evaluating pupil progress and growth.

In a world where the practices of the yesterdays are inadequate for the tomorrows, there is a continuous questioning of all which has preceded. In a glistening, glass-enshrouded, tinkling paradise we are faced with the last frontier--the frontier of the human mind; for we know so little about the mind--what it is, how it works, how it learns, how it stores information, how it retrieves it. Yet, it is by the minds of the boys and girls still in school that all our tomorrows will be shaped in ways almost unimaginable to us now.

Potential for penetrating the heart of this last frontier exists within our educational system, even allowing for the fact that we do not have a system at all, but a number of subsystems that are related by their common lack of a basic philosophy for education--lack of a shared aim and lack of a value structure that will enable us to create a system out of what we are doing. Anyone who delves deeply enough into education in the U.S. will discover a gigantic mosiac that comprises the largest industry by far in our society. In 1966 there were about 125,000 separate educational institutions, with more than 16 million students and nearly 2 million teachers, spending approximately $45 billion annually in full-time schools--not counting adult education classes and extension courses. In short, one out of three persons in the United States (60 million out of 194 million) was engaged directly in the educational system. Out of this massive enterprise will come all of tomorrow's business management, all of industry's employees, all government workers, all consumers--in short, the very shape and texture of American life.

This has not always been so. There are still 11 million adult Americans alive today who did not finish the eighth grade and among them 8.3 million who are classified as functionally illiterate; i.e., those who have not completed six years of schooling. Significantly, however, most of the illiterates are in the older age brackets. Less than four per cent of the 18-year-old group falls into the illiterate classification. The goal of truly mass education did not enter into the mainstream of American life until after 1870. Never before had any nation attempted an

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Georgiades, William. "Evaluating New Strategies in Teaching and Learning." Journal of Secondary Education, Vol. 45, No. 7, November 1, 1970, pp. 320-325.

experiment on so grand a scale as this: mass education to the highest attainable level for every individual in the country.

The shape of the American dream generates new ideas and social and economic changes that are almost unimaginable. "The new world will not be our world," says Robert Theobald in *Education for a New Time*, "it will be created by young people who know how to live in a new environment." Theobald goes on to say, "Within this framework, I challenge you (educators) to be willing to work for something you may dislike. To accept things you cannot understand and to start a process, the conclusion of which is uncertain and probably undesirable to many of us." Francis Kepple, once U. S. Commissioner of Education and now chairman of the General Learning Corporation, says in his book *The Necessary Revolution in American Education*:

> The first revolution in American education was a revolution in quantity. Everyone was to be provided the chance for an education of some sort. That revolution is almost won in the schools and is on its way in higher education. The second revolution is equality of opportunity. That revolution is under way. The next turn of the wheel must be a revolution in quality.

And it is to the question of quality that we will now turn; for if education fails to prepare people for the kind of world in which they will be living as adults, it will have failed its purpose no matter how many millions of people happen to finish school.

We are, in the main, a quantitative society. Questions of quality not only bother us, but frequently are not asked. Or if asked, not answered. Questions of quality and evaluation are clearly interwoven. Before evaluation can be brought to bear on the achievement of quality, quality itself must be defined. Basic to any such definition is the question, "What is the purpose of education?"

In America, the first aim of education was to prepare children to read the Scripture and its intent was religious. Later on the purpose was to enable people to read and write, and thus participate in a democratic process which required an understanding of the issues and candidates involved. Still later, the purpose increasingly became to prepare young people for jobs in an industrialized society. At no time was the aim of public education to prepare students to become individuals or complete human beings. This aspect of education was left to the home, church, mass media, and the city streets. To a certain extent, it still remains there. Yet, in a society that can easily be foreseen, one in which cybernation and mechanization will minimize the human factor in industrial production, the purpose of education must once again change. It must begin to educate people to live full and meaningful lives in which jobs are, at best, only incidental, or at least for jobs that are oriented toward human service rather than physical productivity.

ACCENT ON QUALITY

It is toward questions of quality in education that the new efforts and changes in education sometimes called innovations are directed. Of course, there are the hucksters in our enterprise as is true in any growing society. There are a few people who wish to change for change's sake. There are some who would like to make their million through change strategies in education. But this is not characteristic of the masses of educators throughout our society who are committed to more significant and meaningful ways of educating and reaching youth. And so all across this land of ours--from rural schools in Hagerman, Idaho, and Arvin, California, to city schools in Ridgewood, Illinois, Melbourne, Florida, and Seattle, Washington--efforts are being made to improve the quality of education.

There are many types of innovations in schools ranging from changes that are made more or less spontaneously by teachers in the course of their teaching, and by administrators and other professional personnel in the course of performing their duties to innovations which are adopted and put to use on an extensive basis, i.e., throughout a school or a school system. Planning for putting innovations to use in the school should also include planning for evaluation of their use. Good, sound evaluation is often difficult to make. Nevertheless, it should be made and, in doing so, change should be evaluated in terms of the goals and objectives sought.

Sound evaluation in our society has been facilitated by mobility among educators. Buckling seat belts on fast moving aircraft is the rule rather than the exception among leaders in education. Selective schools across the country receive attention, justly or unjustly, because they have developed improved programs in education, or because they have an effective public relations department, and thousands of people trek through the halls.

What do you look for when you visit a school? No one can be totally objective. What are the kinds of things that one attempts to see? What are the glasses you wear as you look at programs which you visit? What are the evaluative comments you make after you have left the program? What kind of report do you bring back to your faculty, to your board of trustees, to your professional organizations?

Frequently, I have discussed a series of questions one seeks to answer as one looks at new programs in education. I call this a walk-through on innovation. The first thing one needs to know is: What was the purpose for change? Why did this community seek to do something different from that which had been done in the past? What was its purpose in changing? There may be occasions when one sees a good innovation in the wrong place. Local variables must be considered. There is no one schedule, there is no one approach, there is no monolithic pattern for change which will be equally effective in all the schools in our society. Each school differs, depending upon its pupils, its faculties, its plant, its financing, and many other variables. Consequently, any change which purports to be equally effective from the small rural communities of our society to the large urban centers is absurd. What was the purpose for change in a given school? Were there administrators who sought to enhance their reputation? Were there board members who wished to proclaim with pride their innovative program in education? Were there key teachers who were deeply concerned with teaching and learning? What were the facts which led to change in a given school environment?

The second basic conern is what strategy for change was followed in planning? How much time did it take to implement the new program? What were the costs? What was the quality of leadership? Unless teacher roles change, there is no change in education. I'm somewhat tired of seeing part-time teaching called team teaching, of seeing discussion groups function as lecture classes, of seeing study halls called independent study. Such nonsense under the guise of innovation must stop!

Questions that might be asked when one looks at new programs in education are: What was the strategy for change? How was staff involved? How were community and students involved? What kinds of plans were implemented to assist teachers, students, and administrators redefine their respective roles? And lastly: Do the data, does the information show that the targets, the goals are being hit? What kind of evaluative data is available, both from the cognitive and affective domains?

RESEARCH OR OPINIONS?

How do you evaluate innovative practices when the whole school is innovative, when you change the physical plant, the staffing pattern, the time schedule, the educational materials, the methodology, and the role of the teacher and learner--all within a few years? As Gene Howard has said, "As far as I know, it's never been done." Does this mean that we stop building innovative schools? Some people are urging that change in education should be guided by some unwritten rule such as: If you can't evaluate it, don't change it. I wish we were at a sufficiently sophisticated stage of development in educational research so that we could live by such a rule. Unfortunately, such an attitude would prevent us from doing many things which make a lot of sense and which will help our young people learn. We have never, in the history of educational change in this or any other country, made decisions on the basis of educational research. What basis in research do we have for such innovations as class-size 30, the 900-square foot classroom, the Carnegie unit as a measure of progress, the 45-minute period, or the use of a single textbook for a course?

None. The decisions that led to these things were like most decisions in our schools: They were made on the basis of opinion and expediency. In fact, the research we do have about factors that tend to permit children to get excited about learning suggests strongly that the rigidities we have invented are poorly calculated to achieve much of anything positive as far as learning is concerned.

The UNESCO study on mathematics released several years ago is probably one of the best pieces of educational research ever done. What's happened to it? Why aren't school systems all across American looking at its meanings for grouping? We're getting the same kind of reaction to recommendations from the Dartmouth English Conference. Why? Because the implications conflict with deeply entrenched educational prejudices. We do not want to change practices which have been developed primarily to make the schools easier to manage, practices which seem right even though the evidence strongly suggests they are wrong. There is a research basis for such educational concepts as team teaching, continuous progress, independent study, true flexible scheduling, and non-gradedness. The rationale for these concepts is in accord with the findings of many experimental psychologists who have been concerned about how people learn.

How people learn is relevant to any meaningful evaluation. The evaluative process must take into consideration all the dimensions of growth which we anticipate as a result of the teaching-learning act. Unfortunately, many of our efforts in the past have focused upon cognitive achievement. Testing is an old profession, and it appears to have been invented by the Chinese. But it is we pragmatic Americans who have raised the art of testing to its present level of sophistication and monetary reward. Achievement tests which dominate the evaluation scene do not really measure what we as educators believe and what we as Americans believe are the more important outcomes of instruction. The tragedy, however, is that classroom tests on the other hand, are so horribly picayunish as to be hard to believe. We have only recently started to play with the question of assessing those objectives in instruction that are concerned with how students think rather than what they think or know. In his recent research on the outcomes of instruction in the new high school physics course developed by the physical science study committee, Robert Heath developed a cognitive preference test that measures not whether the student can solve each of the problems presented (all the responses are correct), but rather, what sort of answer he prefers. Each response offers a different way of considering the problem. For curriculum evaluation particularly, the cognitive preference test offers a new way to relate achievement testing to the objectives of instruction. If we persist in using outmoded devices to measure new goals and targets, we shall continue to experience no significant differences as a consequence of flexible ways of working with youth.

With reference to problems of change, the matter of appraisal or evaluation is extremely important; for it is particularly, perhaps peculiarly, related to a society or to an educational system during a period of great change. Appraisal and evaluation can either facilitate or retard. Do we accept as our primary goal the statement of Carl Rogers: "We are faced with an entirely new situation in education where the goal of education, if we are to survive, is the facilitation of change and learning. The only man who is educated is the man who has learned how to learn; the man who has learned how to adapt to change; the man who has realized that no knowledge is secure but only the process of seeking knowledge gives a basis for security?" If we accept this as a goal, then our target is to produce a student who has learned how to learn, who has learned how to adapt to change, who knows his ultimate security lies not in possessing knowledge, because it will surely change, but in his ability to seek it. If the "seeking process" becomes our primary goal, our evaluative instruments must reflect such a commitment.

As Dr. J. Lloyd Trump has frequently mentioned, the question of excellence is a difficult one for discussion. There are those who would rather relate quality to class-size or to the number of minutes per week in which a class meets or to the number of volumes in a library or the number of dollars spent per pupil. But there is little research to support the generalization that such variables produce superior learning. Our profession has long known that easily measured criteria do not necessarily produce superior conditions for learning or the educational outcomes listed as desired goals for students. Appropriate patterns of evaluation must consider more than cognitive gains. Such variables as attendance, drop-out rate, student attitudes toward subjects, and patterns of behavior outside of the school day must be considered.

How a child feels about a subject is ultimately far more significant than what he knows about that subject. For how he feels will determine his learnings and his conduct in the years to come; what he knows, will not. The Nazis who slaughtered six million innocent Jews knew too much, but felt too little. I would challenge any faculty to evaluate its programs, its innovative attempts in terms of student attitudes toward mathematics, toward history, toward English. Is it any wonder that so few adults read so few books in our culture? Is it any wonder that a Gallup poll a few years ago found that college graduates do not read on the average of one book a year after graduation? Existing methods of evaluation do not deal with this variable. They simply indicate whether a student knew certain titles and facts about literature at the time of graduation. They do not deal with the question of whether the student will ever read again. Innovative programs with their focus on individual study, independent study, call it what you wish, have as one of their primary targets a lifelong interest in learning. It is not really important whether a student knows given facts about literature. What is important is: Will he read any literature once he has filled out with units his green stamp book called "school" and received his premium which is a diploma. Learning how to learn is a primary target of most new innovative programs. This goal must be measured. It cannot be measured with cognitive devices. It can be measured by attendance; it can be measured by dropouts; it can be measured by ascertaining activities in which students indulge beyond the normal school day, during vacation periods, etc. Grades, standardized achievement testing as we now know them, must be replaced eventually by records of individual pupil-progress. The practice of using monolithic, single purpose tests to measure multiple goals and objectives must be discontinued. The multimillion dollar test corporations must assist us in developing appropriate and multiple ways of evaluating pupil-progress and growth. Those which insist on bowing at the altar of cognitive achievement alone must be by-passed. The focus of evaluation should be on the purposes and goals and the degree to which those are being accomplished better today than they were one month, four months, or two years ago.

The NASSP Model Schools Program seeks to promote worthwhile changes in some 30 widely separated schools. The program was little more than a year old when data for this report were gathered. But one important conclusion could be drawn at once: Some changes can be made easily; others are resisted. This report sorts them out.

WHICH ELEMENTS OF SCHOOL PROGRAMS ARE EASIER TO CHANGE AND WHICH ARE MOST DIFFICULT--AND WHY?

By J. Lloyd Trump
William Georgiades

One year ago, at the NASSP Annual Convention in Washington, D.C., we discussed goals of the Model Schools Project, which we had developed for the NASSP with financial assistance from the Danforth Foundation. Also, we suggested some transitional steps that educators might take in moving any school towards the Model. Our written summary of that presentation, called "Doing Better with What You Have," appeared in the May, 1970, issue of the Bulletin. Now we want to report what has happened during the past year in these Model schools. At the time the following data were reported to us, the schools were one year and three months into the five-year NASSP Model Schools Project (hereafter referred to as MSP). The question is, how much have the schools changed?

Any experienced person knows that it is not easy to change schools. They also know that there is no such thing as effective instant innovation. We respect the efforts of the principals, teachers, and students in these more than 30 MSP schools. Their efforts constitute a significant contribution. Through them, we are accumulating in the MSP what may be the most significant data available about the process of change in schools.

The decade of the sixties saw many grandiose schemes to revolutionize American education. "Team teaching," "flexible scheduling," "mini-courses," "continuous progress," and "independent study" became common terms in "pedaguese."

The flow of federal and private foundation money stimulated numerous so-called "innovations." There was con-

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Trump, J. Lloyd, and William Georgiades. "Which Elements of School Programs Are Easier to Change and Which Are Most Difficult--And Why?" The Bulletin of the National Association of Secondary School Principals, Vol. 55, No. 355, May, 1971, pp. 54-68.

siderable "shuffling of feet" and "verbalizing" in education.

The critical question is whether such verbalizing and shuffling, including the creation of a new vocabulary, did indeed result in any significant changes in the teaching and learning practices of school systems. In the stimulating Hall-Dennis Report relating to Canadian education and entitled "Living and Learning," this statement is made: "Changes in education, no matter how sweeping, profound, or ideal, are barren unless they bring about changes in the classrooms." There is increasing evidence to indicate that the shuffling of the sixties produced few changes behind the classroom door, an idea supported in a recent book by John Goodlad entitled Behind the Classroom Door. Follow-up studies indicate that relatively little change has taken place as a result of millions of dollars invested in the school systems of our society during the past decade.

Even if attempts to effect change in the sixties were largely futile, perhaps those frustrating experiences were necessary, for they may have taught both educators and the public that school systems, like all social institutions, are extremely difficult to change. Now, in the early seventies, there are those who believe that school systems cannot and will not be able to change sufficiently to meet the changing needs of American society and, consequently, that new educational alternatives will have to be provided.

In many respects the NASSP staff utilization studies of the fifties prepared the way for the action of the sixties. Publications such as Images of the Future, 1958 (out of print) and Focus on Change--Guide to Better Schools received wide distribution. The new vocabulary which was to become so common during the sixties emerged from such materials.

The MSP itself is an outgrowth of the staff utilization studies of the fifties. It is an attempt to face realistically the complex problems schools encounter as they seek to change. It is also an outgrowth of our conviction and experiences that only "total commitment to total change" will produce significantly improved schools.

We need to examine carefully why some aspects of schools appear to be more difficult than others to change. Clues to answering that question may be found in our experience with the MSP schools as they have sought to implement the Model described in the May, 1970, Bulletin. By better identifying the major stumbling blocks for change, we may be able to refine our strategies and thereby facilitate the development of more relevant and meaningful school programs.

Data provided by the schools are not as precise as we would prefer. After considerable discussion, we decided to consolidate data by averaging percentage information provided by the schools in answer to such directives as the following:

Indicate how much time the principal spends on each of the following aspects of his job in hours per week: improvement of instruction _____; school management _____; other (specify) _____. (The data were then changed to percentages of time in these three areas.)

Give total hours of clerical assistance provided each week per teacher _____. (The data were then changed to percentages of the Model goal of 10 hours per week per teacher.)

Number of teachers with each of the following types of offices: private _____; semi-private (in a room with others) _____; in a room with other teachers with no visual barriers _____. (The data were reported for each response as percentages of the total teaching staff.)

How many pupils regularly receive reports of special projects completed? _____. This was one question of three relating to systematic-evaluation procedures. The percentages in this case were computed in relation to the total pupil enrollment in each school. Incidentally, in a related question about eliminating A, B, C, D, F grades, one school in Category 2 had done so and it was only in one subject --religion. The average percentage for that particular category came out as .1 of one percent.

WHAT HAVE WE FOUND THUS FAR?

The following paragraphs and three tables summarize the data on the progress of change as reported by the MSP schools. The schools are divided into three categories: (1) seven schools with which the project staff worked most closely and which were given some funds for training and development; (2) another seven schools that received some personal visits and special training; (3) the balance of schools in the project--those experiencing few personal contacts with the project staff, most communication being conveyed by telephone and letter.

Here are some guides to clarify the three tables:

1. The tables show the average percentage of progress among the schools in each of 18 aspects of the Model. Average percentages are given for each of the three categories, ranging from 0 (no progress) to 100% (complete achievement) of that particular aspect of the Model.
2. Table 1 groups six aspects of the MSP that have been most difficult for schools to change; the percentages of change for the three categories of schools are smaller than those six in Table 2. Table 3 groups six aspects of the MSP where the percentages of achievement were largest; therefore, these aspects were easiest to change. Table 2, of course, lists six aspects of medium difficulty between the two

extremes.

3. The numbers 1, 2 and 3 at the left of each table refer to the three categories of schools in the MSP; the data from Category 4 schools (new or non-existent) are included when relevant under Category 3.

MOST DIFFICULT TO CHANGE--TABLE 1

Column I in Table 1 refers to the Model's objective of a teacher-pupil ratio of 1 to 35 (total number of teachers, not counting special teachers, counselors, or assistant principals, divided into the total number of pupils). This high ratio is essential if the appropriate number of aides are to be employed within existing budgets. Without adequate staff differentiation, the lower adult-pupil ratio, vis-a-vis a higher teacher-pupil ratio which is necessary for the individualization of instruction, will not be realized.

Progress has been slow toward this goal, with schools in Category 1 adding only four pupils per teacher. On the average, schools have traveled only 14% of the way toward full implementation of this goal. However, one school in Category 1 has achieved 94% of this objective. Slow progress toward this objective indicates teacher resistance to reducing the size of the certificated faculty, even when funds are available to employ aides. The tradition of the teacher as clerk, bookkeeper, compiler of records, and baby-sitter is difficult to change. But teaching will not become a genuine profession until there is considerable differentiation in roles among adults who work with pupils.

Column II portrays the extent to which MSP schools have eliminated the traditional A. B, C, D, F or other letter grades and have moved to more accurate and comprehensive methods of reporting student progress. The average extent of implementation in Category 1 schools is 31%, with two schools reporting 100% fulfillment. Category 2 shows a very low average, 0.1%, with the best school only .04% along the way, having eliminated letter grades in only one course. Category 3 averages 17% accomplishment, with one school reporting 100%.

The historical reliance of both teachers and parents on better grades makes this area of change a highly sensitive one. However, until we evaluate a pupil on the basis of his own growth, and not mainly on the basis of comparisons with others, we will not individualize instruction. Each person's rate of growth differs. It is inhumane to continue using a single letter grade to evaluate pupil progress. It is important to evaluate a pupil's growth comprehensively on a continuum. but a single letter grade does not accurately describe such growth. The Model calls for systematic reporting of the quantity and quality of a pupil's progress through the various segments of the learning sequence in each curricular area plus a recording

TABLE 1

MOST DIFFICULT TO CHANGE

Category of Schools	Average Percent of Change from 0% to 100% in Selected Aspects of the NASSP Model for Schools							
	I	II	III	IV			V	VI
				Differentiate Staff				
				A	B	C		
	Increase Teacher-Pupil Ratio (from present to 1:35)	Use More Comprehensive Reporting System in Place of A, B, C, D, F	Make Possible That All Pupils May Complete Subjects in Time Spans Other Than Quarters, Semesters, Years	Employ General Aides (5 hours per week per teacher)	Employ Clerical Assistants (10 hours per week per teacher)	Employ Instructional Assistants (20 hours per week per teacher)	Provide Each Teacher with Private or Semi-private Office	Evaluate Pupil Progress: Completion of Special Projects
1	14	31	47	26	37	34	8	24
2	18	1	17	26	30	36	42	61
3	10	17	12	19	10	17	47	23

and appraisal of the special projects that each pupil completes. The report provides appraisals in the cognitive, skills, and affective domains.

Column III refers to schools that make it possible for students to complete subjects in time spans other than quarters, semesters, and/or years. The figures indicate that schools in Category 1 have progressed an average of 47% of the way toward full implementation of the goal of continuous progress with two schools reporting 100%. Those schools in Category 2 average 17%, while those in Category 3 report a low 12% achievement.

For generations we have equated credit with time. Yet we know that humans do not learn by semesters, quarters, or years. Progress in changing this area is complicated by our refusal to identify what the completion of a course means. We have traditionally defined credit by time, not performance. Consequently, we are unsure what our performance objectives are. This uncertainty stands in the way of implementing continuous progress education.

Column IV, Parts A, B, and C, shows the extent to which the schools have achieved the differentiated staff that the MSP requires. The percentages show more progress than in changing the teacher-pupil ratio (Column I), indicating a willingness to employ paraprofessionals at added cost to the school districts.

Column IV-A represents the progress schools have made in employing general aides, based on the Model's goal of five hours per week of such aide service per teacher. Category 1 averages 26%; Category 2, 26%; and Category 3, 19%. Only one school reported 100% fulfillment.

Column IV-B shows the degree of progress in the employment of clerical assistants by the schools when measured against the Model's goal of 10 hours per week per teacher. Category 1 reports 37% implementation; Category 2, 30%; and Category 3, only 10%. Again, only one school in all three categories reported 100% fulfillment.

Column IV-C indicates the progress the schools have made in employing instructional assistants at the 20-hours-per-week-per-teacher ratio established by the Model. Category 1 averages 34%; Category 2, 36%; and Category 3, 17%. Once again, only one school reported 100% attainment.

Some of the same reasons which have kept us from achieving a teacher-pupil ratio of 1 to 35, as seen in Column 1, have kept us from making greater strides in the employment of general aides, clerical assistants, and instructional assistants. The myth that uniformly small class sizes produce superior learning, so carefully nurtured by the teaching profession, is difficult to shatter. The concept of differentiated responsibilities as practiced in dentistry with dental technicians and clerks, in medicine with registered nurses, vocational nurses, clerks, etc. and in other professional groups has not yet made a major impact on teachers.

Column V shows the degree to which the schools have made provisions for private or semi-private office facilities for each teacher. Category 1 shows a low average of 8% implementation of this objective, while Categories 2 and 3 report a 42% and 47% achievement respectively. Inadequate space is usually cited as the reason for not providing offices and work spaces for teachers. Yet, teachers can hardly be expected to function as professionals and relate to pupils as teacher-advisers unless they have privacy in which to work. A few schools may have problems of inadequate space. However, the greatest deterrent to the achievement of this goal may be the refusal of the schools to reallocate space--to break the traditional grip of some persons and departments on the use of certain space. Some schools also persist in the wasteful and costly practice of having teachers work in classrooms that are needlessly devoid of pupils for a time.

Column VI refers to evaluation of pupil progress. The figures are based on completion of projects by the students. The Model places high priority on appraising, recording, and reporting these special projects, whereas the conventional school conceals such information in a single letter grade. Category 1 averages 24%, with one school reporting 100%; Category 2 averages 61%, with three schools showing 100%; and Category 3 averages 23%, with three schools at the 100% achievement level. Making it possible and desirable for pupils to work on special projects, to develop particular interests, or to pursue areas in depth beyond the normal classroom seems to be difficult. Yet, it is in this kind of activity that the unique personality of each pupil is discovered and encouraged as he goes beyond the minimum requirements expected of everyone. Instruction can hardly be individualized until this practice is possible for all pupils. Lack of teacher time or interest may be contributing factors which have militated against progress in this area.

SOMEWHAT LESS DIFFICULT TO CHANGE--TABLE 2

This section of our report shows in Table 2 the middle six characteristics of the Model. These six items are easier to change than the first six but not as easy as the six covered in Table 3, to be discussed later. Although the Table 2 average percentages of change are higher than the Table 1 averages, when considered together for the total group they are in the range of from about one-half to two-thirds of the distance from 0 to 100% achievement of the Model.

Column VII of this table represents the degree to which provision is made, if not for offices, at least for special rooms in which teachers may work. Such facilities are temporary, a transitional step towards private or semi-private office space. Category I averages 63% implementation, with one school reporting 100%; Category 2 averages 47% and also has one school 100% along the way; while

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TABLE 2

SOMEWHAT LESS DIFFICULT TO CHANGE

Category of Schools	Percent of Change from 0% to 100% in Selected Aspects of the NASSP Model for Schools					
	VII	VIII	IX	X	XI	XII
	Provide (at least) Special Rooms for Teachers to Work In (merely a transitional step)	Make Available Continuous Progress Arrangements for Pupils	Teacher-Advisers Schedule Pupils' Independent Study	Evaluate Pupil Progress: Record Completion of Segments in the Required Learning Sequences in the Various Subject Areas	Pupils Spend 4 hours per week in Motivational Presentations (larger than classroom groups)	Teachers Provide Motivational Presentations (larger than classroom groups)
1	63	60	65	60	50	34
2	47	34	63	78	50	65
3	47	63	56	53	92	100

Category 3 averages 47% and shows three schools with 100%. This objective may be somewhat easier to achieve than private offices, since larger spaces (typically vacant classrooms) are frequently converted into departmental offices or workrooms. Such spaces become available in a school that is trying to achieve the Model, because it requires less building space than the conventional school as a result of its more efficient space utilization.

Column VIII shows the extent to which continuous progress arrangements have been made available for all pupils. The Model's goal is 100% availability in all subjects. Category 1 averages 60% achievement, with four schools indicating 100% attainment. Category 2 dips to a 34% level, with but one school at the 100% mark; while Category 3 averages 63%, with one school at 100%. A notable inconsistency exists between Column VIII in this table and Table 1, Column 3, both dealing with the concept of arranging curriculum on a sequential basis. Considerably more than half of the schools have arranged a continuous progress curriculum, but less than one-fifth of them, except for the schools in Category 1 (47%), will permit pupils to complete a subject at any time. It still must be at the end of a quarter, semester, or year. In reality, there can be no continuous progress based on concepts of time. The arrangement of the curriculum in a sequential format is a necessary prelude, but it must be followed by the abandonment of time as the basis for credit if individualization is provided in a continuous progress curriculum.

Column IX shows the extent to which teacher-advisers help students schedule their independent study time. Category 1 averages a 65% attainment; Category 2, 63% and Category 3, 56%. Category 3 reports three schools at the 100% level while the other two categories report two each. Interestingly enough, the great majority of the schools have created the teacher-adviser role, as shown in Table 3, Column XVI. However, the fact that considerably fewer of the schools give the teacher-adviser responsibility for working with the pupils' programs indicates it is easier to change the structure of a school than it is to change what people do. The first is superficial; the latter is basic.

Without the guidance of teacher-advisers in helping pupils schedule independent study time, pupil accountability is likely to be missing. This is a critical role if sound use is to be made of independent study. The individualization of instruction demands that each pupil be well known by one teacher. The teacher-adviser aids the pupil to discover his unique interests and talents by helping him to manage his educational progress, including the program of individualized scheduling. This one teacher is in an excellent position to assist the student in the time choices that he makes. He also receives reports from other teachers and departments about pupil achievements.

Column X refers to the schools' evaluation of pupil progress in respect to their completion of segments in the required learning sequences. Category 1 averages 60%; Category 2, 78%; and Category 3, 53%. It would seem that a good portion of Category 3's percentage of attainment is due largely to five schools of that group reporting a 100% fulfillment. The other two categories report two schools each at the 100% level.

The contrast between these data and the findings reported in Table 1, Column II and VI, should be noted. Apparently it is relatively much easier to keep track of each pupil's progress in completing learning packages, chapters, units, or other segments in a required learning sequence than it is to evaluate special projects or especially to get rid of A, B, C, D, and F. This situation may account for the more rapid progress toward this objective in Column X.

Column XI shows the implementation of the Model's goal that pupils spend four hours per week in large-group motivational presentations. Category 1 averages 50%; Category 2, 50%; and Category 3, 92%. Once again, we have five schools in the latter category at the 100% level, while Categories 1 and 2 report two and one school, respectively, at this level. The definition of "large-group" is "larger than usual classroom groups."

The emphasis in large groups is on motivation, because in a continuous progress individualized program, the presentation cannot relate specifically to what pupils are doing in their independent study. Rather, it aims to show once a week how the study of the subject area can open options in careers, hobbies, or better living for pupils. The presentation thus becomes an essential ingredient in the learning situation, raising it above conventional supervised study or correspondence study activities.

Column XI shows the degree of implementation of large-group motivational presentations by teachers. The Model proposes two hours per week per teacher. Category 1 shows a 34% average; Category 2, 65%; and Category 3 shows an unprecedented 100% fulfillment by all schools in this group. Category 1 has but one school at this level, while Category 2 reports two.

Large-group presentations have been characteristic of team teaching designs for many years. They have not, however, been motivationally oriented. To arrange such presentations for 30 minutes a week in each of eight subject areas demands a reorganization of the entire school schedule. A majority of schools are arranging large-group sessions. Apparently they find such a program easy to schedule. Of course, the question remains, how motivational are these sessions? We are studying this question further to see once more the relationships between structural and program changes.

LEAST DIFFICULT TO CHANGE--TABLE 3

Finally we come to the six aspects of the Model that principals find easiest to change. The percentages in Table 3 typically show achievement of nearly three-fourths of each of the six goals of the Model. As in Tables 1 and 2, the progression is from left to right. For example, the least difficult change to make is the scheduling of pupils into smaller than classroom-size groups for motivational discussions (column at far right).

Column XIII of Table 3 shows the extent to which teachers have become involved in the development of learning packages. Category 1 averages 77%; Category 2, 76%; and Category 3, 59%. Category 1 reports three schools at the 100% level, while the other two categories report two each at 100%. Junior high school teachers in one Category 1 school have produced more than 1600 packages for their continuous progress program. It is relatively easy to get teachers to prepare curriculum packages. Package workshops at universities and in school districts have become common. Although this achievement says little about the quality of such packages, the development signifies a good deal of constructive teacher activity in the right direction.

Column XIV shows the amount of teacher involvement with small-group motivational discussions (defined as taking place in smaller than regular class-size groups), a percentage based on the Model's goal of eight hours per week in this activity. Category 1 averages 60%; Category 2, 78%; and Category 3, 81%. Category 1 reports one school at the 100% attainment level, while Category 2 reports three and Category 3 reports five. Considerable progress has been made toward the organization of small-group motivational discussions. The Model says motivational since these small-groups provide a place for pupils to react to the motivational presentations that the faculty has provided. Also, students motivate each other in these groups. Apparently both teachers and pupils consider these groups desirable; such groups are also consistent with demands for humanization in our society.

Column XV, Parts A through I, indicates the extent to which all pupils have systematic, continuous contacts with all eight basic curriculum areas (religion is a ninth area in parochial schools). Category 1 schools average at or above the 75% level of achievement in English, mathematics, social studies, science, health and physical education, and the practical arts, but drop off to a 61% level for fine arts, and a low 48% in the area of cultures of foreign countries. The Category 2 schools average a 74% level or higher in three of these areas--English, health and physical education, and social studies; however, they were lower than Category 1 in all other areas except in the "other cultures" department. Category 3 schools show less variance in their averages, ranging from a 97% in English

TABLE 3

LEAST DIFFICULT TO CHANGE

Category of Schools	Average Percent of Change from 0% to 100% in Selected Aspects of the NASSP Model for Schools													
	XIII	XIV	XV									XVI	XVII	XVIII
			Pupils Have Systematic, Continuous Contacts with All Curriculum Areas											
			A	B	C	D	E	F	G	H	I			
	Teachers Make Learning Packages	Teachers Meet Pupils for Motivational Discussions (smaller than classroom-size groups)	Fine Arts	Other Cultures (For. Lang.)	Practical Arts	Science	Mathematics	Social Studies	Health, Fitness, Recreation (PE)	English	Religion (Cath.)	Create the Teacher-Adviser Role	Principal Spends 3/4 of His Time on Improving Instruction	Pupils Spend Time in Motivational Discussions (in smaller than classroom-size groups) *
1	77	60	61	48	75	75	77	85	83	96	100	91	74	60
2	76	78	39	57	66	66	69	74	87	100	100	72	83	100
3	59	81	56	59	71	71	77	86	80	97	97	66	72	100

to a 56% in fine arts. Examining the three categories, we find religion and English heading the list with health and physical education and social studies in the third and fourth positions. On the other hand, we find continuous contact in the fine arts the most difficult to implement, followed closely by other cultures.

In some areas these curricular findings are consistent with school practices over the years. Schools have usually required continuous contact in the subjects of English, mathematics, social studies, and physical education. However, such contacts in science and the practical arts indicate a significant change. If all the basic areas of human learning are to be given equal consideration, such contacts must also be expanded to include cultures of foreign countries and the fine arts. The concept of curriculum "equality" appears to be gaining momentum in the Model schools.

Column XVI reports the degree to which teachers are functioning in a teacher-adviser role to a group of 30-35 students. Category 1 averages 91% with four schools reporting a 100% achievement. Category 2 and 3 averages 75% and 66%, respectively, each reporting two schools at the 100% level. Structural changes, such as a teacher's being assigned to 30 students as an adviser, are easily arranged. The question is, what are teachers doing in this role that is uniquely different from the old homeroom adviser role? Unless they confer regularly with individual pupils and rearrange programs and schedules for each as needed, individualized instruction will not become a reality (see Table 2, Column IX).

Column XVII shows the extent to which principals are devoting at least 75% of their time on improving instruction. Category 1 averaged 75%; Category 2, 83%; and Category 3, 72%. Categories 1 and 3 report one school each at the 100% mark. By reorganizing patterns of responsibility, principals have been able to release themselves for instructional leadership. While the quality of such leadership may be difficult to determine, this is a significant step forward if the Model is to be totally implemented. Apparently, this reorganization in the principal's role has been relatively easy to accomplish.

Column XVIII refers to pupil participation in motivational small-group discussions in comparison with the Model's goal of four hours per week for each student. Category 1 reports two schools attaining a 100% implementation and averages 60% for the group. Both Categories 2 and 3 show a 100% achievement by all schools in this area. This finding is consistent with Column XIV. Pupil participation in motivational small-group discussions has been implemented to a considerable extent. It may have proven comparatively easy to achieve because of its appeal to both teachers and pupils.

REACTIONS TO THE FINDINGS

A summary of the most and least difficult areas of change implementation for the MSP Model raises some interesting questions:

1. Changing the teacher-pupil ratio apparently is the most difficult requirement of the MSP. Yet it is crucial in reallocating funds to produce professional teachers and better learning environments. What new strategy might help?
2. The grading system has been condemned by generations of educators. It ranks second as the most difficult to change. Why? The Model provides more detailed information on individual progress with instructions for calculating rank in class, credits earned, and the like for colleges and employers who still demand such information.
3. Professionalizing teaching, providing better independent study, improving evaluation, and other MSP changes depend on the use of all three kinds of assistants. The progress here is third most difficult. Do schools lack the courage to provide *more* adults to work with pupils even though fewer of them have professional degrees, according to the Model?
4. Providing a better work-study environment for teachers appears to be quite difficult. Yet every school building has much wasted space. What stands in the way?
5. Pupils do not profit from "failure." Why is "continuous progress" so difficult to achieve?
6. Other aspects of the Model are easier to change. Almost easiest of all is for the principal to change his own duties in order to concentrate on the improvement of teaching and learning. That commendable change is long overdue in thousands of schools.

More than 30 schools have told their story after 18 months. They have sought in varying degrees to implement total change. Some of their findings, their progress, and their frustrations are not new. These schools will continue to strive during the next three years to achieve the dimensions of the Model. They will experience new progress and frustrations, but they will be seeking to develop meaningful school programs for all youth.

The staff has planned for extensive evaluations of the progress in these schools by both external and internal researchers. Change in pupils, teachers, and principals will be analyzed as will the conditions for learning, teaching, and supervising. We will analyze changes in the use of facilities, supplies, school funds, and time. The comparisons will not be among schools but rather how each individual school fares against its own baseline data.

The secondary school principal today is fraught with frustrations. Principals have two options: They can bear with the frustrations of adolescent alienation toward the teaching-learning process and all that this involves. Or they can seek change in the secondary schools of our society to reduce this alienation. There are frustrations in the latter option too. Which option will you select?

You may wish to use this report and other materials available from the NASSP with pupils, teachers, and communities in exploring meaningful options. This report may help you avoid some of the detours, problems, and pitfalls others encountered. At least this is our hope and that of the schools totally committed to total change in the NASSP Model Schools Project.

EVALUATION THE PONTOON TRANSITIONAL DESIGN: FINDINGS AND STRATEGIES

By Donald C. Clark

The development of valid evaluating procedures for measurement of the effectiveness of programs such as the Pontoon Transitional Design presents a challenge of great magnitude. This challenge becomes particularly difficult when one examines the many variables which may affect the results of the study.

William Georgiades discusses this dilemma when he makes the following statement:

> How do you evaluate innovative practices when the whole school is innovative, when you change the physical plant, the staffing pattern, the time schedule, the educational materials, the methodology, and the role of the teacher and learner--all within a few years?

Others have raised questions about the adequacy of evaluation techniques in measuring the effectiveness of innovative programs. Egon Guba states:

> The traditional methods of evaluation have failed educators in their attempts to assess the impact of innovations in operating systems. Indeed, for decades the evidence produced by the application of conventional evaluation procedures has contradicted the experimental evidence of the practitioner. Innovations have persisted in education not because of the supporting evidence of evaluation but despite of it.

This failure of evaluation can be attributed to several reasons. Ebel suggests that "new curriculum developments are often based on different educational objectives than the old. Seldom are they offered simply as new means of attaining old ends."

He goes on to say:

> A second problem arises as a consequence of the multitude of variables in addition to the curriculum that can affect the attainment of curricular objectives: variables like pupil ability and interest, teachers' skill and attitude, instructional resources, schedule differences and competing innovations. Adequate control of all of these variables would be difficult to achieve in the most favorable experimental environment.

Ebel continues by pointing out that "most curricular developments occur in the ongoing educational process." Under such conditions the experimenter must compromise ideal experimental conditions to avoid unacceptable compromises in educational conditions. He concludes by stating:

> As a consequence of these difficulties and limita-

> tions, attempts to evaluate alternative curriculum in comparative experimental studies have seldom if ever yielded conclusive, unequivocal results.

In discussing evaluation of team teaching programs, Georgiades is in basic agreement with Ebel's statement on differing educational objectives for new curriculum development. He states:

> Greatly improved student performance as measured by standardized achievement tests is not the most important objective of team teaching. Teaching basic methods of inquiry and cultivating a desire to learn are much more significant. The purpose of education is not to pile up a storehouse of information in each student's brain but to give him the tools with which to think. Unfortunately, most current techniques of evaluation are designed to measure the piling-up process.

Georgiades also expresses concern that little effort has been made to measure some of the more significant targets of team teaching. He would classify some of the following as targets:

1. Increasing the student's critical thinking ability through small group study
2. Developing his ability to discuss with others through small group experience
3 Building his sense of responsibility for his own education through independent study
4 Allowing the student to move at his own pace by giving him more individualized instruction.

As discussed by Ebel and Georgiades, the limitations and problems of evaluation are many and complex. They, however, are not insurmountable. Georgiades expresses a need for "Comprehensive studies which will measure all the influential factors in the learning process, such as socioeconomic status, intellectual ability, sex, grade level, ethnic representation, and teacher behavior, as well as the interaction among these factors."

A method for achieving more comprehensive studies suggested by Georgiades was the development of "complex, yet clearly formulated, theoretical models of team teaching." It is the writer's belief the Pontoon Transitional Design meets the criteria as a "complex, yet clearly formulated, theoretical model." As such, a series of evaluative studies on its effectiveness have led to the development of new insight on innovation.

PONTOON STUDIES: COGNITIVE AND AFFECTIVE FINDINGS

The initial evaluation of a pontoon design was conducted by Georgiades and Bjelke at Hawthorne High School during the 1962-63 school year. This pontoon consisted of ninety ninth grade students, scheduled to participate in an all morning program (four periods) which was comprised of three academic subjects (algebra, English, and world geography) and a supervised study hall.

The study sought to (1) compare the English performance of pontoon students with those students in regular classes, (2) determine teacher reaction to this type of instruction, and (3) determine student reaction. To answer these questions the Cooperative English Test, forms 2A and 2B were administered in September 1962 and May 1963. Teacher and student reaction to the program were measured by questionnaires.

The findings were as follows:

1. Experimental pupils showed slightly more growth. The difference was not significant.
2. Teacher enthusiasm for program was readily apparent.
3. Students attitudes tended to be positive. This positive feeling was particularly strong in the area of small group instruction where 86% of the students requested more.
4. Lack of significant negative evaluation led investigators to believe that the design was initially workable.

Georgiades and Bjelke conclude their description of the study with the following statement:

> Subsequent investigation may provide answers to many questions, such as, the effectiveness of this program for pupils of various degrees of ability. Before any more definite and far-reaching conclusions can be made, further study in this area, exercising greater control of the significant variables is in order.

During the 1964-65 school year Georgiades and Bjelke conducted an evaluative study of a three-period block, team teaching program at Charter Oak High School. The purpose of the study was "to compare English achievement of ninth grade pupils enrolled in a three-period block, team teaching (experimental) class with English achievement of ninth grade pupils enrolled in a conventional (control) class. Subjects taught in the block included algebra, English, and social studies. All experimental group students also received two days a week of instruction in a reading laboratory.

For the purpose of the study the following measurement devices were utilized:

1. California Test of Mental Maturity--(short form) Language I.Q.
2. Differential Aptitude Test--Verbal Reasoning and Numerical Ability
3. California Reading Test--Reading Vocabulary and Reading Comprehension
4. Teacher-made English Test

A 2 x 2 x 2 analysis of variance (mode of instruction by I.Q. by sex) was utilized for their study. This analysis of variance revealed:

1. A significant difference in the means in favor of the experimental group on the teacher made test and the California Reading Test--Reading Comprehension.
2. A significant difference in means for the high level of intelligence group vs the low level of intelligence group on all three measures.
3. A significant difference in means of girls vs boys on the teacher made test.

Georgiades and Bjelke conclude:

> From the significant results revealed in this study, it appears that the three-period block is at least initially workable. It must be remembered that a comparison was being made between relative inexperience with one method (team class) and experience with another method (conventional class).
>
> Consequently, the evaluation might not have been completely fair to the team method of instruction, since there is a possibility that the teachers have not yet had an opportunity to make maximum use of and to capitalize upon the advantages afforded by this new method. Therefore, the significant findings in favor of the experimental group add further support to the efficacy of the three-period block design as an instructional method.

The Creative Education Project, initiated at Arvin High School in 1966, added several new dimensions to pontoon evaluation. They expanded the cognitive evaluation to include achievement measurement of all subjects within the pontoon. They also attempted to measure the attitudinal impact of the pontoon on students by devising a semantic differential test, recording student attendance, and conducting a drop-out study.

In summarizing the results of the study, Anderson states:

1. A multi-subject team teaching approach has resulted in a significant increase in the experimental group's mean I.Q.
2. Students in the project are remaining in school significantly longer than students not taught in a team teaching method.
3. A significant difference in academic achievement can be seen between the Creative Education Project students and the control group.
4. Student interest in school and attitudes toward school are positive factors in the team teaching approach.
5. Teacher enthusiasm for the teaming approach is high.
6. Direct teacher involvement in curriculum planning is a necessary thing in the development of a program such as this. Teacher instructional behavior is difficult to change unless this direct involvement is present.
7. It is feasible to individualize instruction in a multi-subject team teaching approach.

Young, during the 1967-68 school year, continued to study pontoon at Arvin High School. For the purposes of his study, he asked the following questions:

> Would there be a difference between the measurable characteristics of achievement and attitudes of ninth grade, low ability students in a pontoon transitional design and those of students of comparable status in a traditional program?
>
> Would there be a difference between dropout and absence rates of the two groups?

In most cases, Young found no significant differences in the achievement of the pontoon group when compared to that of the traditional group.

Burke, in his evaluation of a high school program, focused primarily on student attitudes and teacher behaviors. Cognitive achievement was also measured to determine differences (if any) between the performances of pontoon and traditional students in the areas of English, biology, and world history.

Utilizing appropriate instruments for measurement of attitudes and cognitive achievement, Burke found no significant difference in the teaching performance of pontoon and conventional teachers. However, the smallness of the sample (3 teachers) tends to mitigate against drawing any conclusions.

In conclusion, Burke makes the following statement:

> While the findings of this study did not clearly favor either the Pontoon Transitional Design or the conventional curricular structure, it did suggest that the essential factors in determining differences in effective teaching and learning were the behavior and the attitude of both teachers and students, and the degree to which teacher and student behavior could be changed. The experimental design, in this case, the Pontoon Transitional Design, continues to merit implementation; however, efforts at evaluation of such designs, and greater emphasis in training personnel in a manner appropriate and functional, are necessary so that differences are given a chance to emerge. Ultimately, the purpose for the existence of any new structural design is the facilitation and enhancement of the teaching-learning process.

During the 1969-70 school year, Abbott and Roop evaluated pontoons operating in the Bellflower Unified School District. Abbott studied the effects of the pontoon on a group of average ability eighth grade students. The two groups (pontoon and conventional) were given the Sequential Tests of Educational Development in the areas of mathematics, social studies, and writing. Attitudes were assessed by using the Rundquist-Sletto Attitudinal Scale and by comparing daily attendance patterns over a nine-month period. The behavior of pontoon and conventional teachers was compared by using the Teacher Observation Scale and the Teacher Record of Activities.

Abbott was able to draw the following conclusions from his study.

1. Pontoon students scored significantly higher in mathematics than did conventional students. There was no significant difference between the two groups in social studies and writing.
2. The analysis of the attitudinal scale revealed a tendency for the pontoon students to select positive responses more frequently than the conventional students.
3. In the area of teacher behavior, there was a tendency for pontoon teachers to lecture more while conventional teachers tended to provide more individual assistance and to engage in more clerical activities.

Roop's study concentrated on the evaluation of a ninth grade, low I.Q. general science--English--social studies pontoon. Cognitive achievement was determined by standardized and teacher-made tests; attitudes were assessed by utilizing the Rundquist-Sletto Attitudinal Scale, record of attendance, and incidence of discipline referral; and teacher behaviors were measured for comparison by the Teacher Record of Activities.

Cognitive findings showed a significant difference in favor of the pontoon students on the teacher-made mathematics test. The other subject area tests (standardized and teacher-made) tended to also favor pontoon students but the differences were not significant.

In the area of attitudes there was no significant difference on the whole test. However, there was a significant difference in favor of the pontoon on item six: view of the value of education toward future employment. Attendance data showed no differences between the groups, but the incidence of discipline referrals was significantly less for pontoon students.

The Teacher Record of Activities indicated that when compared to conventional teachers pontoon teachers utilized more large group instruction, more small group discussions, and spent more time planning with others. Conventional teachers utilized more teacher dominated class presentations, more total class discussion, and spent more time in independent class assistance.

Neel, in his study of the Pontoon Transitional Design, found that seventh grade pontoon students achieved significantly higher in the area of vocabulary, total reading and reference materials. Using a semantic differential instrument he found significant differences in favor of the pontoon group in the affective areas of school, directed study, and geography. The Remmers' scale also yielded significant results with pontoon students indicating more positive feelings toward the subject areas of English, social science, and science.

In his conclusions Neel states that "in no cognitive or affective variable did the control group score significantly higher than the experimental (pontoon) group."

Based on this conclusion and findings of other pontoon studies he makes the following recommendations:

> . . . with the growing accumulation of research concerning the pontoon design, educators should consider this approach as an alternative to other forms of scheduling.

During the 1969-70 school year Clark conducted an evaluative study of the pontoon at Clifton Intermediate School, Monrovia, California. The study entitled "The Pontoon Transitional Design: An Evaluation of Attitudes and Cognitive Achievement of Selected Seventh Grade Students". . .

> . . . was primarily concerned with investigating the relationship between classroom structure (The Pontoon Transitional Design and conventional programs) and the achievement of seventh grade students in reading, social studies and mathematics.

Also investigated were the relationships of the pontoon and conventional programs to pupil attitudes and absentee rates. Additionally, the classroom performance of pontoon teachers was compared to the performance of teachers in conventional programs.

Findings of the study indicated that pontoon students achieved significantly higher on the teacher constructed social studies test. A significant three-way interaction was found between I.Q., method, and sex on the teacher constructed mathematics test. The differences favored (1) high intelligence pontoon boys, (2) high intelligence comparison girls and (3) low intelligence comparison boys. In the affective domain no significant differences were found on the attitude questionnaire or in the absentee rate.

Examination of pontoon schedules indicated that the pontoon teachers did not utilize time in a significantly different manner than did comparison teachers. The schedule did indicate that pontoon teachers varied the class size (large group, small group) significantly more than did comparison teachers.

Observation of teacher classroom behavior (Teacher Observation Scale) showed no qualitative differences between the behaviors of pontoon and conventional teachers.

In summary, it should be stated that the failure to consistently obtain significant differences in both the cognitive and affective areas may be partially attributable to the similarity of the teaching behaviors of pontoon and conventional teachers. Burke, Roop, and Abbott also found that when the teaching methodologies of experimental and comparison group teachers were similar that few significant differences were found in student attitudes and cognitive achievement. This important area of teacher performance will be discussed in greater detail in the concluding sections of this paper.

THE PROBLEM OF SIGNIFICANCE

Invariably the results of research studies are stated as follows: "No significant difference was found in the achievement of the experimental group when compared to that of the control group."

What exactly does this mean? In terms of the studies reviewed it does mean that experimental and control group pupils achieved at approximately the same level. This, however, does not tell the entire story of the findings. When one considers, for example, that in both studies made by Georgiades and Bjelke and in the studies made by Anderson and Young that the pupils were spending up to one-third less time with a teacher, the no significant difference finding gains some significance. This observation also holds true for the Burke, Abbott, and Roop, and Clark studies.

The point that needs to be made is that in some instances there is significance in a "no significant difference" finding. Young states it well when he says:

> In looking at the significant differences on certain dependent variables, and then associating those differences with the instruction received in the pontoon design, one could conclude the change in achievement was due to the instructional differences that were available throughout the pontoon design. Then it would follow that in the majority of the "no difference" results found in reviewing the literature and in this study, one could conclude that the outcomes of instructional differences were negligible. However, this was not the case for this particular study. The "no difference" findings were just as significant, for achievement growth was negligible when the instructional time, under the direct supervision of a teacher in the pontoon design, was only one-third that of the direct instructional time of the control group.

Guba also is concerned with no significant differences. He would, however, fault evaluation techniques and not innovations for this reoccurring phenomenon. He states:

> Another very significant indication that evaluation is in trouble is the fact it is so often incapable of uncovering any significant information.
>
> Over and over comparative studies of alternatives in education have ended in a finding of "no significant difference." Several conventional responses are made to this situation. It is often observed that the educationists are incapable of devising any approaches that are better than those things that they are already using. But, if this is so, we ought perhaps to applaud their remarkable consistency, since they do not devise alternatives that are any worse either!

> Another oft heard response is to say that the lack of efficacy of comparative studies is well established by this consistent failure to find differences; educationists are then warned not to engage in such studies because to do so is to behave stupidly. This equally glib response, of course, ignores the fact that this comparative question is exactly the one that must be asked if improvement is to occur. What could be more relevant, as one gropes to change for the better, than to ask about alternatives, and to seek to determine which of several available alternatives, including present practice, is most efficacious?

In concluding his article, Guba makes the following statement:

> The primary task in evaluation today is the provision of sensible alternatives to the evaluator. The evaluation of educational innovations awaits the modernization of the theory and practice of the evaluative art. We need, then, a technology of evaluation.

Guba feels that the future is bright and that the profession is showing many signs of awareness of the current problems of evaluation. "What is important now," he states, "is that (current) efforts be vigorously pursued and made operational as quickly as possible."

TEACHER PERFORMANCE

The performance of teachers in innovative curricular programs may provide another dimension when considering the problems of "no significant difference." In programs, like the pontoon, where the flexibility of the schedule provides teachers with variation of time and group size, the role of the teacher is especially important. If a pontoon teacher utilizes the same methodology with a small discussion group that she would normally use with a standard size class, no intructional advantage is gained. Under such circumstances it is not surprising for the results of an evaluation to yield "no significant difference" between the experimental and conventional programs.

Cawelti, in a study of twenty-two schools utilizing flexible or modular scheduling, expressed this concern:

> . . . it appears that in many instances not much change in teaching occurred except that traditional teaching was done for different lengths of time in different sized groups.

Fox in discussing the evaluation of the More Effective School Program in New York City expresses this same concern when he states:

> It (human behavior) does not change simply because the conditions under which the behavior is performed change, not even because the old behavior is inappropriate to the new conditions.

He goes on to say:

> Why should we have to expect her (the teacher) to teach differently simply because there were now 20 children in front of her rather than 28?

The dimension of teacher performance has become a major concern of those responsible for the evaluation of innovations. It is, therefore, not surprising to note the inclusion of teacher performance measurement procedures in the studies of Burke, Abbott, Roop and Clark. These studies, as reviewed previously, indicated differences in student achievement where significant differences were found in teacher behavior. In Burke's study, no difference in teacher behavior yielded no significant difference in student achievement.

Because of the importance of teacher behavior in curriculum evaluations, the concluding section of this paper will briefly discuss some devices utilized in measuring and coding teacher behavior.

TEACHER OBSERVATION SYSTEMS

Probably one of the most comprehensive reviews on observation of classroom instruction was written by Barak Rosenshine of Temple University. Entitled, "Evaluation of Classroom Instruction," and published in the April, 1970, Review of Educational Research, the article attempts "to describe available instruments for the observation of classroom instruction and to suggest modifications for local evaluation of instruction." This article is briefly reviewed in the following paragraphs.

Rosenshine offers the following statement as the justification of a need for classroom observation:

> The lack of information on classroom interaction hinders evaluation of a single curriculum or different curricula because without this information one tends to assume that all classrooms using the same curriculum materials constitute a homogeneous "treatment variable."

He strengthens his case by quoting from a forthcoming AERA monograph on classroom observation:

> Neither an understanding of what the curriculum has been or what should be tried next time is possible without data on teaching methods. In some evaluation studies the most valuable data will be those gathered by a classroom observation system.

Uses of observation systems can be classified into the following four areas:

1. Assessing the variability of classroom behavior either within or between instructional programs
2. Assessing the agreement between classroom behavior and certain instructional criteria
3. Describing what occurred in the implementation of the instructional materials
4. Determining relationships between classroom behavior

and instructional outcomes.

According to Rosenshine "instruments for the observation of instruction are currently divided into category systems and rating systems." He goes on to say:

> This division is based on the amount of inference required of the observer or of the person reading the research report. Inference here refers to the process intervening between the objective data seen or heard and to the coding of those data on an observational instrument. Category systems are classified as low-inference measures because the items focus upon specific, denotable, relatively objective behaviors such as "teacher repetition of student ideas," or "teacher asks evaluative question" and because these events are recorded as frequency counts. Rating systems are classified as high inference measures because they lack such specificity. Items on rating instruments such as "clarity of presentation," "enthusiasm," or "helpful toward students" require that an observer infer these constructs from a series of events.

Most category systems are one-factor systems in which each behavior is coded only in terms of its frequency. The best example of a one-factor system is Flander's Interaction Analysis. The Teacher Behavior Inventory used by Burke in his study and the Teacher Observation Scale based on the work of Flanders, Amidon, and Robertson and refined by Clark, are both examples of one factor category systems.

Rating systems most commonly take the form of questionnaires where participants are requested to respond to items on a four or five point scale ranging from strongly agree to strongly disagree. The best examples of this system are found in attitude inventory scales.

Rosenshine concludes his article with the following summary:

> Without adequate data on classroom transactions, it is difficult for an evaluator to make suggestions for the modification of an instructional program. Yet, researchers are only beginning to develop tools and concepts for the evaluation and study of instruction. Currently, three major needs are: greater specification of teaching strategies to be used with instructional materials, improved observational instruments that attend to the context of the interactions and describe classroom interactions in more appropriate units than frequency counts, and more research into the relationship between classroom events and student outcome measures.

Some of the procedures described by Rosenshine have been incorporated into recent evaluative studies of the effectiveness of the pontoon. As the pontoon concept continues to expand more and more emphasis will be placed on the role of the teacher in the classroom. As this happens classroom observation systems will play an important part in evaluating performance and providing feedback on weaknesses.

SUMMARY

In reviewing the evaluative studies of the pontoon it is interesting to contrast the differences in the first studies conducted by Georgiades and Bjelke with those recently completed studies of Abbott, Roop, and Clark. As I see it, the difference lies basically in terms of comprehensiveness. The early studies dealt only with achievement in one component subject and then later expanded to include all of the subjects included in the team teaching program. It is also interesting to note that the first study, conducted by Georgiades and Bjelke at Hawthorne High School also attempted to measure attitudes of both students and teachers. This is significant when one considers that in 1963 we were in a period of great emphasis on cognitive achievement. This pattern of placing equal emphasis on cognitive and affective measures was continued in the Anderson and Young studies. This trend continued to be emphasized in the pontoon evaluations conducted by Burke, Abbott, Roop and Clark.

The final section of the paper was concerned with classroom observation systems. Emphasis was placed on the importance of these areas in assisting teachers to utilize appropriate methodologies as they vary time and group size. The importance of classroom observation in providing vital feedback on classroom procedures was also stressed. The section ends with a discussion of the role observation plays in determining the effect of interaction styles on student achievement.

In examining the Pontoon Transitional Design over its brief ten year history, one becomes aware of the transitional nature of its development. It is interesting to observe the operation of the plan-implement-evaluate-revise-implement cycle. Consequently, the transitional development of the pontoon was based on a close interdependence of development and an evaluation. The result was that as more sophisticated programs were developed more comprehensive evaluation strategies were required. Simple evaluations expanded to include a multitude of cognitive and affective measures, schedule analysis, and classroom observation.

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AN EMERGING MODEL: CRITERION-REFERENCED EVALUATION

By Jack L. Housden
Lannie LeGear

INTRODUCTION

The concept of evaluation in education is in a stage of transition. Evaluation practices evolve continuously, to be certain, but there appears to be a genuine transition in how evaluation is to be considered. This change centers about the definition of the standards by which learning shall be judged, particularly in reference to a set of measurable instructional objectives.

Conventionally, the standards by which educational achievement has been judged have been norm-referenced. Norm-referenced standards are based upon averages which are derived from the performance of groups of individuals. These standards can be determined for any evaluation problem by merely defining a reference group and measuring its performance. The average level of performance of the chosen reference group becomes the expected performance level by which the quality of subsequent outcomes will be judged.

Norm-referenced standards are relative to the reference group upon which they have been based. A change in the reference group will result in a change in the standard. Norm-referenced standards are also considered to be relative because they *do not* indicate what an individual can do with respect to a *specified* instructional objective. Rather, they indicate what an individual can do in reference to other individuals, which may or may not be related to any specific instructional objectives.

The contemporary focus for evaluation in education is shifting from a relative, norm-referenced context to a more finite and absolute one. Educators are concerning themselves with the identification of specific skills and competencies required for learning. Such a concept expresses itself in efforts to define learning in terms of the mastery of specified tasks and in their assessment.

Standards for evaluation are taken as fixed cut-off points by which individual mastery and/or skill attainment can be judged adequate or inadequate, irrespective of the collective performance of reference groups. These standards termed criterion-references standards, are absolute because they *do not* depend upon a reference group and because they *indicate* what an individual can do with respect to specified instructional objectives.

The transition in educational evaluation from relative to absolute standards demands rethinking of the concept of evaluation, and this reformulation can be expected to encompass the idea of behavioral objectives for instruction. The criterion-referenced evaluation model presented in this paper is emerging from these concepts.

Figure 1 compares and contrasts norm-referenced and criterion-referenced concepts which exempligy this transition.

Figure 1. A comparison of norm-referenced and criterion-referenced concepts.

Norm-referenced	Criterion-referenced
Reference points are average, relative points	Referenced points are fixed at specified, cut-off points
Evaluates individual performance in comparison to a group of persons	Evaluates individual performance in relation to a fixed standard
Are used to evaluate a student as "below grade level," "at grade level" or "above grade level."	Not concerned with grade level descriptions.
Fails to indicate which individuals have mastered the spectrum of instructional objectives.	Identifies individuals who have mastered the spectrum of instructional objectives.
Generally poor aids in planning instruction.	Geared to provide information to be used in planning instruction.
Is vague in relation to the instructional content.	Is content-specific.
Is more summative than formative.	Is more formative than summative.
Does not operationally define mastery and/or success.	Operationally defines mastery and/or success.
Applies poorly to the individualization of instruction.	Applies directly to the individualization of instruction.
Is not concerned with task analysis.	Depends upon task analysis.
Does not lend itself to applied behavioral analysis.	Lends itself to applied behavioral analysis.
Standardized tests are classical examples.	Does not tend to be standardized.
Tests not sensitive to the effects of instruction.	Tests very sensitive to the effects of instruction.
Tests have a low degree of overlap with actual objectives of instruction.	Tests are directly referenced to the objectives of instruction.

Norm-referenced	Criterion-referenced
Test items evaluated in reference to persons.	Test items evaluated in reference to instructional objectives.
Tests results interpreted in reference to a person's position in relation to the scores of others.	Tests results interpreted in reference to a person's position in relation to the curriculum.

CRITERION-REFERENCED EVALUATION

A criterion-referenced evaluation model proposes to evaluate individual performance in relation to specified criteria rather than in relation to other individuals' performance. It evaluates in terms of criterion-referenced standards as opposed to normative standards. Criterion-referenced standards are defined to be absolute standards by which individual competency is judged. The emphasis of those absolute standards is upon what an individual can do in relation to specified behavioral objectives of instruction.

Criterion-referenced evaluation is intended to reflect comprehensively the content of a particular curriculum. The curriculum, in this context, is defined as the successive mastery of discrete content units or objectives stated in terms of the behaviors the student is to perform. At any point in time a student will have mastered some portion of the behaviors represented by the curriculum, and his score on a criterion-referenced test is a listing of those behaviors he has mastered and those which he has not yet mastered. The meaning of his test results derives from his position in relation to the curriculum and not from the relation of his scores to the scores of others.

Criterion-referenced evaluation, then, begins with a comprehensive set of specific behaviorally-stated objectives. Tests are designed to discriminate between mastery and non-mastery of these objectives. They are selected to reflect the curriculum--that is, to be sensitive to instruction and therefore accurately represent mastery or non-mastery of objectives. Criterion-referenced evaluation, therefore, is conceptualized as the comparing of performance with objectives.

A criterion-referenced model requires that standards by which mastery shall be judged are to be specified prior to assessment. The selection of the cut-off points for the standards of performance appears to be somewhat arbitrary. Research efforts have yet to identify the parameters involved in setting mastery standards. However, several operating instructional programs which employ a criterion-referenced evaluation system exist. An analysis of their cut-off criteria may be useful in the eventual setting of these standards. For example, the Banning Adult School in

Wilmington, California, employs an 80 per cent mastery standard (80/100 of the test items correctly answered) in a programmed instruction individualized learning setting. Using a similar programmed instruction format, the Central City Occupational Center in Los Angeles, California, has adopted an 85 per cent mastery standard (85/100 of the test items correctly answered). Southwest Regional Laboratory in Inglewood, California, advocates a 100 percent mastery standard in their Learning Mastery System for first grade reading. Likewise, the Southern California Regional Occupational Center (SCROC) in Torrance, California, requires a 100 per cent competency level for certification of proficiency in their auto tune-up training program.

In summary, while the selection of criterion-referenced standards for judging mastery of instructional objectives is somewhat arbitrary, once selected they become absolute cut-off points for evaluating the outcomes of instruction. If the curriculum is organized in terms of sequences of instructional objectives, then criterion-referenced evaluation is the appropriate model for evaluation of learning outcomes.

CRITERION-REFERENCED TESTING

The criterion-referenced evaluation model requires a criterion-referenced approach to testing and test construction. The primary purpose of criterion-referenced tests is to yield scores that are directly interpretable in terms of specified performance standards. A criterion-referenced test is one that is deliberately constructed to give scores that tell what kinds of behaviors individuals with those scores can demonstrate. These procedures tend to be very specific and limited to a narrow range of educational objectives. This results in the use of tests which: a) are built to appropriately prescribed behavioral objectives; b) are sensitive to change via intervention (instruction); and c) may constitute an operational definition of success or mastery.

In order to construct a criterion-referenced test one must essentially perform a task analysis of the relevant behavior. This must also be applied to the method and material used to teach the student to acquire the intended behavior. The task analysis will help classify objectives into subtasks. Each subtask must be logically related to the basic objective and the basic objective to the broader curriculum. Test items must clearly reflect this classification of subtasks.

The emphasis which has been placed upon stating terminal performance objectives for instruction in behavioral terms and demonstrating the achievement of those objectives necessitates evaluative instruments for measuring the presence or absence of said objectives.

Adoption of a criterion-referenced evaluation model mandates the development of criterion-referenced measurement techniques in which instrument items are objective-specific. Objective-specific means that the items are keyed directly to the objectives of instruction so that some congruence exists between items and objectives. Hence the items themselves must be specifically connected in some manner to the objectives. They must be objective-specific.

Criterion-referenced test items must also be criterion-related. That is, some criterion-referenced standard for judging competence in reference to the item must be determined prior to the administration of the test. Items which are objective-specific and criterion-related have the potential to be good criterion-test items.

Criterion-referenced tests provide the vehicle for evaluation of instructional success in terms of a student's achievement in relation to a specified body of content. Ideally, criterion-referenced tests should: (1) be made up of items which directly assess the skills involved in a unit of learning; (2) provide an indication of the exact areas and behaviors in which a student has achieved mastery or non-mastery; (3) provide cross-referencing of the subskills required in each test item; and (4) also provide cross-referencing of skills with instructional materials.

There has been a variety of approaches to criterion-referenced instrumentation. Criterion-referenced tests themselves assume many forms. Figure 2 summarizes representative types of criterion-referenced instruments currently being used.

Figure 2. Representative types of criterion-referenced instruments.

Types	Common Uses
Objective tests (True-false, multiple choice, completion type items)	Used as pretests and posttests to measure cognitive learning outcomes. Perhaps the most commonly used (and misused) criterion-referenced tests. Frequently termed "paper and pencil tests."
Task Analysis charts	Used in targeting behaviors to be shaped through instruction and in identifying their presence or absence.
Self-rating checklists	Used in self-evaluation to determine the presence or absence of certain predefined characteristics.
Diagnostic inventories	Used in identifying prerequisite skills and entering competency levels. Used for classification and placement; also for program planning and remediation.

Types	Common Uses
Problem identification checklists	Used in identifying problems or potential problems by assessing the presence or absence of specified pre-conditions for success.
Antecdotal situation quizzes	Used when the terminal performance objective is a prescribed response to a novel situation. Lends itself to an audio-visual presentation of the novel situation.

APPLICATION OF CRITERION-REFERENCED EVALUATION TO INDIVIDUALIZED INSTRUCTION

A criterion-referenced evaluation model is particularly suitable for facilitating the implementation of a continuous progress curriculum as well as other individualized instruction programs. For example, criterion-referenced evaluation can function to arrange a particular set of objectives in an hierarchical sequence (such as in reading and mathematics) with the mastery of one set or subset of behaviors prerequisite for the next. Where an hierarchical sequence is not necessary, as may be the case in some science and social study content, criterion-referenced evaluation can assist in developing a sequence of steps which indicate precisely what desired behaviors are to be learned. When such a sequence is obtained, then, it is possible at any one point in time to answer the question "Where does the student stand in respect to some defined body of content that is interpretable in terms of the skills and behaviors needed for mastery of that content?" Criterion-referenced evaluation of individualized instruction, therefore, can be used to assure success of a particular instructional sequence in relation to a particular student's achievement.

Teachers can also use the results of a criterion-referenced testing situation to mold the instructional sequence around the individual student's rate and style of learning, individual goals, level of motivation and other unique characteristics. The teacher can also use the assessment situation to determine the extent to which the student has achieved the problem solving skills to the best of his ability. In addition, further instruction is based upon sequences of skills which can be carefully defined in terms of those skills which are both prerequisite to and sufficient for varying levels of mastery so that the teacher or student can determine which level of proficiency is sufficient for the particular individual. The teacher can determine as well the effectiveness of the "match" between student, method, material, environment, and time so that one or all may be adjusted to provide for success for the student.

SUMMARY

A transition in the concept of educational evaluation appears to be clearing the way for the emergence of criterion-referenced evaluation. A criterion-referenced evaluation model is proposed to evaluate individual performance in relation to specified criteria (criterion-referenced standards) rather than in relation to other individual's performance (norm-referenced standards). Criterion-referenced standards are defined as absolute standards, since, contrary to relative, norm-referenced standards, they do not depend upon a reference group, and they do indicate what an individual can do with respect to specified instructional objectives.

Adoption of a criterion-referenced evaluation model requires the development of criterion-referenced measurement techniques which relate test items to instructional objectives.

Criterion-referenced evaluation is particularly well suited for helping to pave the way for more widespread adoption of individualized instruction.

Summary

For many years educators have felt frustrated because the majority of evaluations of promising new programs report "no significant difference" when compared to existing programs. It should be pointed out that the prevalence of this phenomenon may represent shortcomings in evaluation design and procedures rather than the ineffectiveness or inferiority of innovative programs.

In this section various writers have examined some of the factors important to building effective evaluative programs. The following concepts were emphasized:

1. Comprehensive evaluations must measure "all of the influential factors in the learning process."
2. New methods must be devised that will effectively measure all of the objectives of individualized programs. Evaluation of new programs can no longer be limited exclusively to the measurement of the "piling-up process" (achievement tests).
3. Learning how to learn is the major goal of most innovative programs. Methods must be devised to evaluate this goal.
4. There are certain elements within the school program that are much easier to change.
5. Comprehensive evaluation programs must be developed that incorporate the plan-implement-evaluate-revise-implement cycle.
6. Only long-range evaluation strategies can provide for a close interdependence of development, evaluation, and revision.
7. Criterion-referenced evaluation has particular significance to individualized instructional programs.

The importance of comprehensive evaluation systems as a part of any instructional program cannot be overemphasized. Evaluation takes on added significance to the innovative educator who looks to it as a source of information for decision making. Individualized programs are not built overnight; they require nurture, patience, guidance, and evaluation.

Resources

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